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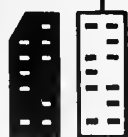
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Illinet Output

University of Illinois at Urbana-Champaign.....Department of Computer Science

Vol. 3, No. 1

January, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

| | |
|---|----|
| OUR NEW LOOK | 2 |
| SO LONG, 1800 | 2 |
| CONSULTANTS ARE WALLED IN | 3 |
| LONELY? CALL AMANDA | 3 |
| NEW PLOTS FEATURES | 3 |
| WE'RE LEARNING TO COPE | 4 |
| CALCOMP CHANGES | 5 |
| GETMAIN AND FREEMAIN ON EXPRESS | 6 |
| INQUIRY STATION | 7 |
| SELECTED LIBRARY ACQUISITIONS | 8 |
| THE 360 RUNS | 10 |
| IF YOU COMPLAIN, WE'LL ANSWER | 11 |
| SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE | 11 |

OUR NEW LOOK

As you can see, we have made many changes to our newsletter this month. In addition to the obvious format changes, we are also changing the content slightly. Along with our regular items we will include articles keeping you up-to-date on the activities of the various staff members of the Computer Center. We will also take a peek at various user projects from time to time. Any suggestions or comments you have about the newsletter will be greatly appreciated and should be directed to the Editor, 173A, Digital Computer Laboratory.

DID YOU KNOW?

Some of the Chicago Medical Center personnel are terminal users.

SO LONG, 1800

The College of Engineering expects delivery of its new hybrid computer sometime in January 1971. The Computer Center will, therefore, discontinue use of the IBM 1800 computer effective February 1, 1971.

Separate arrangements are being made for the paper tape users of the 1800. These arrangements will be announced in the near future.

DID YOU KNOW?

Our system may contain ideas from Penn State, Iowa, Stanford, and all points east. Our programmers keep aware of the work being done at

January, 1971

3

other installations so they can more quickly improve our own services.

CONSULTANTS ARE WELLED IN

The long awaited wall for the Consulting Office is finally here. The wall was put up over semester break and should greatly reduce the noise level in the office. The consultants can now help you with fewer distractions, so why not stop in and give them a problem?

LONELY? CALL AMANDA

The keypunch area now has an Amanda phone recorder which lists the highest number for completed keypunch jobs. The recording is updated each day, Monday through Friday at 9:30 a.m. and 3:30 p.m. Amanda's phone number is 333-7751, why not give her a call?

NEW PLOTS FEATURES

A new command, #ASM, has been implemented for the PLOTS system. #ASM has the same effect as specifying:

#COPY, #COPYC, #NUM 1 1, and #STAB 10 16 32 72.

Tabbing has now also been implemented for the 2741 terminals. Hitting the TAB key has the effect of inserting blanks in the line up to the next tab stop specified in a #TAB or #STAB command. Both the #TAB and #STAB commands mean the same thing for 2741's. Note that when the TAB key is hit, the carriage will physically move to the next tab position defined on the keyboard with the tab set

key. The tab position used by PIORTS, however, is the column specified with the #TAB or #STAB command.

DID YOU KNOW?

Lorraine Kupczyk in our Accounting Office, 171 DCL, now orders the IBM manuals for us. You still have to obtain a manual request card from the Consultants before seeing her though.

WE'RE LEARNING TO COPE

Pat Johnson and Bob Skinner, two of our system programmers, recently made a trip to Chicago to investigate a new terminal and its possible use under our system. This is their report:

Our visit to Chicago to see the Cope Terminal (Communication Oriented Processing Equipment) Model .25 was quite interesting. Although the exact model we wanted to see was not available and will not be until approximately April of this year, the model which it most closely resembles (Model .30) was temporarily installed there and we were able to use it to transmit jobs via dial-up line to and from our 360.

Physically, its size is about the same as IBM's 2780. It is modular in design, the Model .25 being the smallest capacity available and all models are upwardly compatible. It is a computer with 4K (12 bit) word core memory and is therefore programable or can be run stand-alone using supplied utilities such as card to printer, card to card, etc. It comes standardly equipped with a line printer (300 l p m), card reader (300 c p m), 4K memory, communications interface, remote controller, and optionally with a teletype console (highly desirable), punch, mag or paper tape, and plotter.

The Model .25 costs \$1100 per month, \$80 extra for TTY console, \$440 extra for punch, etc., including all software and maintenance charges. This favorably compares with 2780 costs.

This terminal is multileaved and can, therefore, perform all functions "simultaneously" up to line speed capability. We tried a multileaving test and could see no degradation in printing and reading together although console activity had a considerable effect on performance. Complete console support is available via teletype units on all models. This allows use of all permitted HASP commands and replies such as job inquiry, deletion, message routing, etc.

We have more details, information, and observations if you would like to come see us to discuss them.

DID YOU KNOW?

Janet Michel, one of our consultants, is working on a service programming project for Dr. DeMoss of the Microbiology department. She is implementing a program written at Iowa State for analyzing electronic absorption spectra.

CALCOMP CHANGES

A new version of CCP5AX went into effect during December. The new routine allows numbers with up to three decimal digits to the right of the decimal point to be used as labels along the axis. This change is internal to CCP5AX and does not effect the calling sequence. User programs should, therefore, not require changes.

A new version of CCP4SC has just been put on the system. The new routine fixes an error in the scaling of small CalComp plots.

GETMAIN and FREEMAIN on EXPRESS

In order to provide better management of core storage on EXPRESS, modified versions of the GETMAIN and FREEMAIN macros have been placed in the macro library used by the Assembler on EXPRESS. The modifications cause all GETMAIN and FREEMAIN macros assembled on EXPRESS to refer to a subpool numbered two greater than indicated by the user.

For programs assembled completely on EXPRESS, the change should cause no difference in execution of the user's program. However, since the change applies only to jobs assembled on EXPRESS, the following may not execute properly on EXPRESS:

```
// EXEC ASMLDCØ
//ASM.SYSIN DD *
.
.
GETMAIN
.
.
/*
//GØ.SYSDECK DD *
    <object deck>
/*
```

This will not execute properly if the object deck contains the FREEMAIN corresponding to the illustrated GETMAIN. This type of problem can be avoided if corresponding GETMAINS and FREEMAINS appear in the same assembly. All assemblies containing GETMAINS and FREEMAINS should be done on EXPRESS if the job is to be run on EXPRESS.

INQUIRY STATION

NOTE: Entries for the INQUIRY STATION originate with the "User Comment and Suggestion Form" available from the Information Desk and Consulting Office, and with the form contained on the last page of each issue.

Question: If an unauthorized user enters a job on the 360/75 on my PS number and the job is flushed because of lack of a code-word, does a cover charge accrue to my account?

Reply: No charges are made to your account for 360/75 jobs that are flushed for not having a code-word.

Question: Isn't there some way to have a CalComp plot done in india ink without having to pay for it twice, i.e., having to show a ballpoint pen plot to consultants before running it in india ink?

Reply: The use of india ink requires a change of ink and pen for the plotter. The job is considered to be a special run because it requires special handling by the operator which results in a delay for the plots of other users. We feel that proof of a correct run before allowing the use of india ink decreases special handling and increases throughput of the CalComp plotter.

Request: The number of keypunch machines is totally inadequate during most of the working day. Is it possible to have one or two machines reserved for faculty members?

Reply: Isolating two keypunches for faculty use is currently not feasible. Physical space is very scarce at ECL and it would be almost impossible to find a room for them. If we could, then we would have the problem of the keypunches being idle at times. To reserve keypunches for faculty use in

Room 131 presents the problem of policing them. We are presently re-evaluating our keypunch situation and hope to have a more adequate solution in the near future.

SELECTED LIBRARY ACQUISITIONS

At the beginning of the year the Department of Computer Science Library (260 DCL) had approximately 3507 texts, 794 volumes of bound periodicals, and 308 volumes of proceedings. Some of the most recent additions to the library are listed below.

Integer and Nonlinear Programming, J. Abadie

Computers in Architectural Design, D. Campion

Medical Computing, E. Akranes

Picture Processing and Psychopictorics, B. Lipkin and A. Rosenfield

Systems Analysis for Business Data Processing, D. Clifton

Microelectronics, M. Fodiel

Computer Techniques in Image Processing, H. Andrews

APL Programming and Computer Techniques, H. Katzan, Jr.

High Speed Pulse Circuits, A. Barna

Automated Police Information Systems, P. Whisen and T. Tamaru

The Impact of Computers on Organizations, T. Whisler

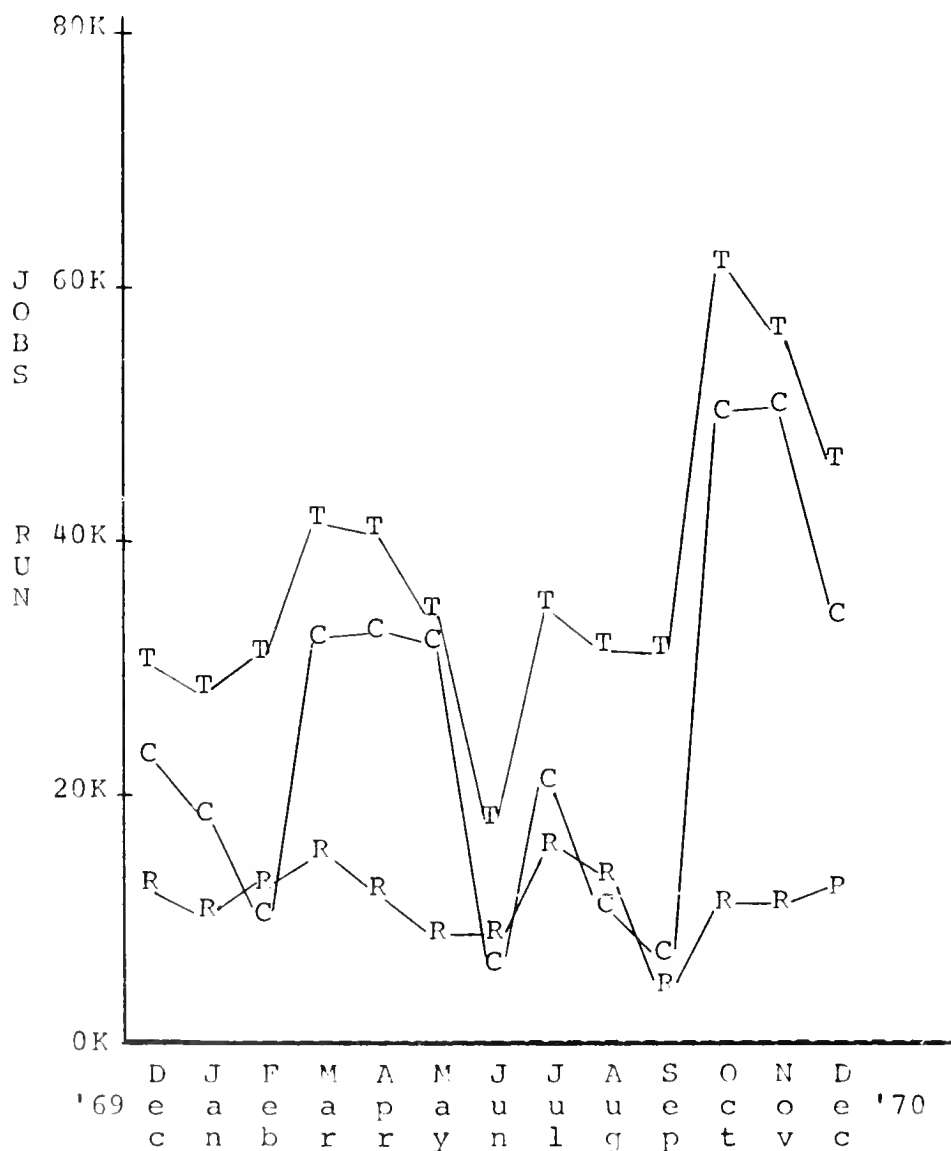
A Compiler Generator, W. M. McKeeman, J. J. Horning,

and D. B. Wortman

Multiple Time Series, E. J. Hannan

Handbook of Pulse Digital-Devices for Communication
and Data Processing, H. E. Thomas

Regression and Econometric Methods, D. S. Huang

THE 360 RUNS

CLASS (C) + RESEAPCH (P) = TOTAL (T)

IF YOU COMPLAIN, WE'LL ANSWER

The Computer Center invites your comments, complaints, and suggestions regarding the facilities and services offered. We will reply directly to all comments if a return address is provided. Just complete and return this page to Mr. Merl Foster, 175 DCL. If you have an urgent problem and all the normal channels have failed, give Merl a call at 333-6618. He'll try to set things straight for you.

SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE

Additions or deletions to our mailing list may be made by completing and returning this page to Editor, ILLINET OUTPUT, 173A DCL.

Please (include, delete) my name from the ILLINET OUTPUT mailing list. Check here to register an address change. []

Name-Title: _____

Address: _____

EDITOR.....Nick Smith

PUBLISHED TEN TIMES YEARLY BY THE DEPARTMENT OF
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Miss Patricia F. Stenstrom
2205 Library



Illinet Output

University of Illinois at Urbana-Champaign.....Department of Computer Science

Vol. 3, No. 2

February, 1971

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CONTENTS

PAGE

| | |
|---|----|
| LEARN ATS IN SEVEN EASY LESSONS | 2 |
| WHAT'S MY JOB DOING NOW? | 2 |
| PROGRAMMERS REGROUP | 3 |
| NEW TAPE DRIVES TEN TIMES FASTER | 4 |
| THE EXPRESSIVE WATFIV | 5 |
| OPERATORS ARE ATTENDING CLASSES TOO | 5 |
| AXIS AND SCALE REVISED | 6 |
| THE NEW, MORE EFFICIENT CCP4SC | 6 |
| INQUIRY STATION | 7 |
| SELECTED ACQUISITIONS | 8 |
| THE 360 RUNS | 10 |
| IF YOU COMPLAIN, WE'LL ANSWER | 11 |
| SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE | 11 |

THE LIBRARY OF THE
APR 15 1971
UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

LEARN ATS IN SEVEN EASY LESSONS

For those of you who would like to learn how to use ATS, there is a teaching aid now available through ATS itself. This feature, called LEARN ATS, consists of an introduction and seven lessons which give a basic knowledge of ATS. The Consultants have handouts on LEARN ATS and can enroll you as a new ATS user if you have a valid problem specification number.

Workbooks for use with LEARN ATS may be purchased from IBM by contacting Jerry Murtaugh or Karl Krause at 356-2501. These workbooks are "For Sale" manuals and cannot be ordered through the Computer Center.

DID YOU KNOW?

The Computer Center is currently taking part in a University pilot study to determine the possibilities of re-cycling scrap paper.

WHAT'S MY JOB DOING NOW?

Since we frequently get asked this question, we have developed a means of letting you keep closer track of your job. We now periodically post a list of the jobs in the system on the DCL lobby bulletin board. For each job in the system, the list describes its status: in hold, executing, printing, etc. There is a sample sheet posted with the listing to help you interpret your job's status.

In addition to this job status sheet, we provide the touch-tone phone in the DCL lobby so you can check to see if your job is out at any time. We are also working on a means of providing you with the average turnaround time per job class so you

will know when to expect your output. We can not call you personally when your job is done, but we are trying to do the next best thing.

PROGRAMMERS REGROUP

In order to more effectively coordinate their total programming effort, the system programmers have recently decided to form seven functional groups. Each group has a generally defined area of responsibility and the group structure helps to coordinate programming efforts in that area. Since most programmers are in two or three groups, however, a free interchange of information is still possible.

The seven functional groups and their leaders are:

- I. Express Group-Freda Fischer
- II. HASP/OS Development Group- Larry Chace
- III. Research and Programmer Education Group-
Tom Allen
- IV. Subroutine Library Group- Beth Richardson
- V. Subsystems Group- Sandy Moy
- VI. System Maintenance and Training Group-
Candy Wilmot
- VII. System Measurement and Evaluation Group-
Bob Skinner

Bob Penka was asked to serve as a coordinator for all groups to help establish communication channels, keep track of all projects assigned, etc.

The organizational structure may be changed periodically as the programmers try various positions and groups in order to devise the most effective structure.

NEW TAPE DRIVES TEN TIMES FASTER

Our 7-track and 9-track 800 BPI tape drives have been replaced with new ones which are roughly ten times faster. Users of the old 9-track 800 BPI drive (UNIT=TAPE8) now have to add a density parameter to their DD cards, as the new 9-track drive can write at 800 or 1600 BPI.

Examples:

- a) //FT01F001 DD UNIT=TAPE8,DCB=DEN=2,...
- b) //TAPEØUT DD UNIT=TAPE8,DCB=(DEN=2,
// BLKSIZE=80),...

The DEN=2 specifies 800 BPI and is necessary only when writing on tape; the hardware will automatically sense the density when reading. Users of the 7-track drive (UNIT=TAPE7) or of the 9-track 1600 BPI drives (UNIT=TAPE) need make no changes to their JCL.

The new tape configuration is listed below;

| no. drives | address | type | UNIT= | density | DEN= |
|---------------|---------|--------|------------------|---------------------|--------|
| 3 | 0C0-0C2 | 2420-5 | TAPE | 1600 BPI | 3 |
| 1 | 0C3 | 2401-6 | TAPE8 or TAPE | 800 BPI 1600 BPI | 2 3 |
| 1 | 0C4 | 2401-3 | TAPE7 | 200 BPI | 0 |
| | | | | 556 BPI | 1 |
| | | | | 800 BPI | 2 |

THE EXPRESSIVE WATFIV

WATFIV is now available on Express. The Express version differs from the HASP/OS version in the following ways:

1. The RUN, PAGES & TIME parameters on the \$JOB card are ignored.
2. Execution time is limited to 2 seconds, execution output is limited to 4 pages.
3. \$LIST and \$NOLIST are accepted as synonyms for \$PRINTON and \$PRINTOFF, respectively.
4. No object decks will be accepted.

Grading programs and data libraries for basic computer science courses are accessible from both WATFOR and WATFIV.

It is worth noting that WATFIV generates more efficient object code than WATFOR. Practically this means that larger jobs can be run on EXPRESS under WATFIV than under WATFOR.

DID YOU KNOW?

Steve Leighton, one of our service programmers, is currently working for Professor Schiller of the department of Veterinary Clinical Medicine. Steve is designing and coding an information retrieval system for abstracts of veterinary medical cases.

OPERATORS ARE ATTENDING CLASSES TOO

Understanding and efficiently controlling a complex system such as ours requires sophisticated operators. To sharpen their abilities in this area our operators are currently engaged in a six weeks

training program. Under the direction of Bob Skinner our programmers are giving extensive training to the operator shift supervisors, Gary Bouck, Rex Duzan, and Don McCabe, who in turn are training the members of their respective shifts.

The Operators are making fine progress and are working hard to provide you with the best operating possible.

AXIS AND SCALE REVISED

The AXIS and SCALE CalComp routines have been revised to eliminate the DIV (in AXIS) and D (in SCALE) parameters from the calling sequences. In the revised routines only ten divisions per inch (DIV or D = 10.0) will be allowed. Since both DIV and D were the last parameters in the parameter lists for their respective routines, it is not necessary to change the calling sequence in any present program which uses DIV or D = 10.0.

THE NEW, MORE EFFICIENT CCP4SC

A new version of CCP4SC, the scaling routine for the CalComp plotter, has been added to the subroutine library. Without having changed the calling sequence, the new routine scales much more efficiently than the old version it replaces. In fact, on 1250 tests on 8 inch, 4 inch, and 2 inch plots, the wasted plot space of the revised CCP4SC was always less than or equal to the wasted space of the old routine. The following list illustrates the differences between the two routines.

OLD: Picks scale factor equal to $n.n \times 10$
NEW: same

- OLD: Picks n.n from table of numbers
(1.0,1.5,2.0,2.5,4.0,5.0,8.0)
- NEW: n.n can be any two digit number
in the range 1.0 to 10.0
- OLD: Wasted space often greater than
25% and on small graphs sometimes
greater than 50%
- NEW: Wasted space at anytime rarely
greater than 25%
- OLD: Written in FORTRAN
- NEW: Written in ASM and takes less than
half as much core
- OLD: K less than 0 signals an error
- NEW: K less than 0 means the plot is
reversed with the starting point
equal to the maximum X

DID YOU KNOW?

HASP has been changed to allow the punching
of column binary cards by a user program.

INQUIRY STATION

NOTE: Entries for the INQUIRY STATION
originate with the "User Comment and Suggestion
Form" available from the Information Desk and
Consulting Office, and with the form contained on
the last page of each issue.

Suggestion: The CalComp plotter is possibly
in need of minor adjustment, namely a tightening or
replacing of the cable which drives the pen in the
Y direction.

Reply: Your suggestion was brought to the attention of the engineers responsible for our plotter and they have made the necessary adjustments. The plotter you mention was one we were using temporarily while ours was being overhauled at the factory in California. We have since had our own plotter returned.

Suggestion: Have a placard posted at the output windows giving the average turnaround time for the different job categories. This would save time for both the users and the routing personnel.

Reply: Our system programmers are currently working on a facility to provide the information you've requested.

SELECTED ACQUISITIONS

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Handbook of Data Processing for Libraries,
R. M. Hayes, and J. Becker

Management Information Systems, J. J. O'Brien

Computer Architecture, C. C. Foster

Logical Design of Digital Systems, D. L. Dietmeyer

Integrated Electronics, R. Sorkin

The Computerized Society, J. Martin, and A. Norman

An Executive's Guide to Computer Concepts,
J. Monsma, and K. Powell

The Computer Revolution, E. A. Tomeski

Future Shock, A. Toffler

Markovian Decision Processes, H. Mine, and S. Osaki

Annual Review of Information Science and Technology,
C. A. Caudra

Graph Theory and Its Applications, B. Harris

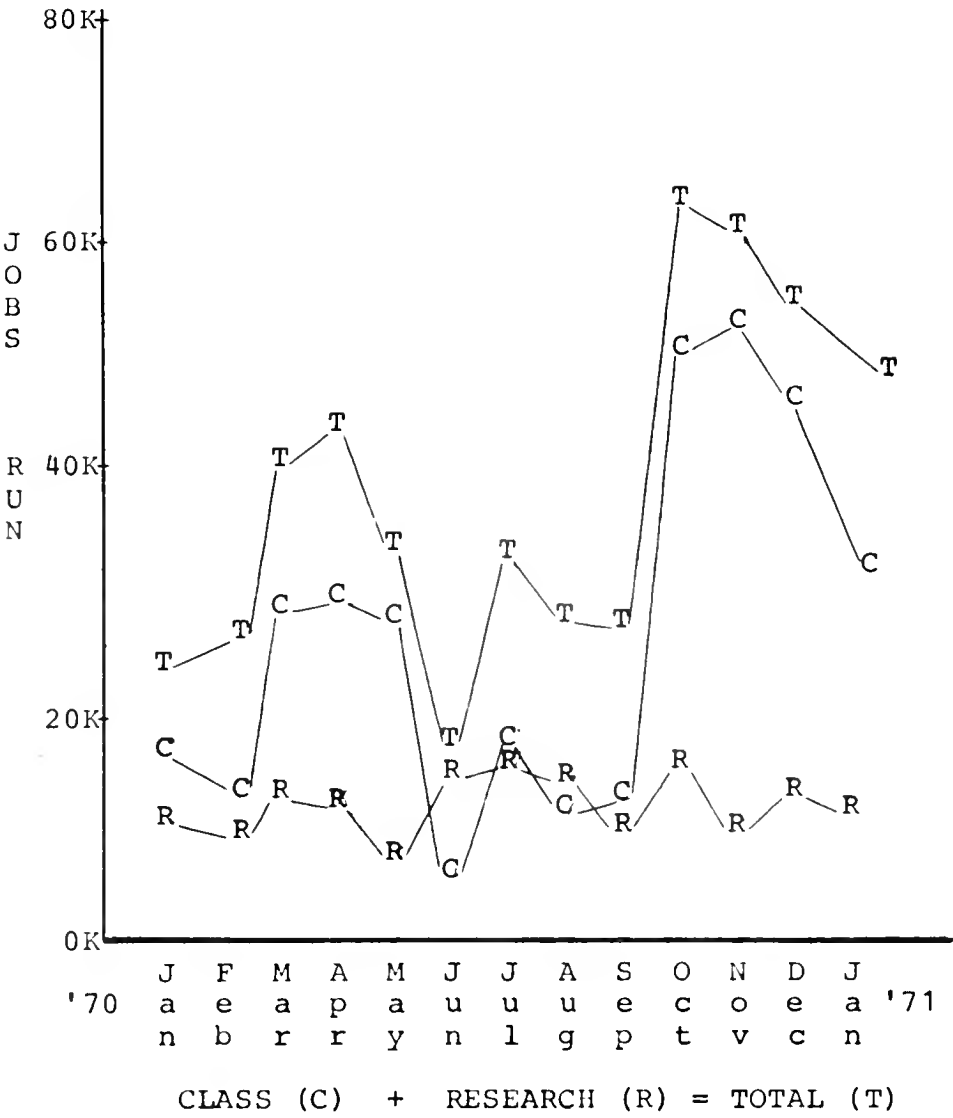
Computers in Knowledge-Based Fields, C. A. Myers

Optimization and Probability in Systems Engineering,
J. G. Rau

Optimization by Vector Space Methods,
D. G. Luenberger

Computer Applications in Stratigraphic Analysis,
J. W. Harbaugh, and D. F. Merriam

THE 360 RUNS



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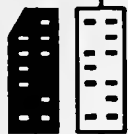


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University of Illinois at Urbana-Champaign-----Department of Computer Science

Vol. 3, No. 3

March, 1971

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CONTENTS

PAGE

THE LIBRARY OF THE
APR 15 1971
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| | |
|---|----|
| FACULTY SHORT COURSES | 2 |
| AND NOW THERE'S REMOTE EXPRESS | 2 |
| INTRODUCING TPIØZ | 3 |
| OUR OWN TELEVISION SHOW | 4 |
| NEW WATFIV AVAILABLE | 4 |
| A CLASS DATA SET BY ANY OTHER NAME... | 5 |
| FROM PLØTTZ TO GRAPHZ | 6 |
| FREE LOCKERS! | 6 |
| INQUIRY STATION | 7 |
| SELECTED LIBRARY ACQUISITIONS | 7 |
| THE 360 RUNS | 10 |
| IF YOU COMPLAIN, WE'LL ANSWER | 11 |
| SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE | 11 |

FACULTY SHORT COURSES

During the spring semester we will again offer a series of non-credit, no-fee short courses designed to aid our users on the 360. These courses are open to all faculty and staff members, and graduate students.

The courses will emphasize practical exercises and applications using the 360 and will generally meet for three sessions per week: two 2-hour lecture/discussion periods and an optional 2-hour workshop period during which specific programming problems will be discussed.

Users interested in attending a particular short course should register at the Information Desk in the DCL Lobby not later than five days prior to the first meeting of the course. Each course will be limited to 35 students and may be cancelled if fewer than 10 applications are received.

A complete description of course offerings is available at the DCL Information Desk, and page 9 of this issue contains a diagram of the times, dates, and places that the courses will be held.

AND NOW THERE'S REMOTE EXPRESS

Users who have access to a remote terminal may now submit their jobs to the EXPRESS system directly from the terminal. In order to utilize EXPRESS from a terminal, the user should:

1. Be sure his job conforms to the limitations imposed by EXPRESS.
2. Add a new /*ID card parameter, SYSTEM=EXPRESS; this may conveniently be punched as a second /*ID card.

3. Submit the job as usual at the remote terminal. This submission should occur during normal EXPRESS hours (11:00 a.m. to 9:00 p.m., Monday through Friday, and 10:00 a.m. to 4:00 p.m., Saturday). EXPRESS jobs submitted at other times may not be run, according to the system load and other operational considerations.
4. Be prepared to receive his output with little delay, since EXPRESS jobs will have priority in printing over other jobs returned to the terminal.

In addition, remote terminal installations are requested to read only a few EXPRESS jobs at a time before allowing them to print, since these EXPRESS jobs are included in the maximum of 400 jobs which HASP can maintain at any given time.

DID YOU KNOW?

According to RANDOM BITS, the Indiana University Computing Center newsletter, the Library of Congress has been accepting computer programs for copyright for the past six years.

INTRODUCING TPIØZ

TPIØZ, in the UOI Subroutine Library, is a collection of routines which allow the FORTRAN or assembler programmer to exercise complete control over tape I/O. Records may be read or written, files may be skipped or backspaced, etc. The various entry points and their functions are:

TPØPNZ - open for input and output
TPØPIZ - open for input
TPØPØZ - open for output
TPCLSZ - close

TPFSFZ - forward space file
TPBSFZ - backspace file
TPFSRZ - forward space record
TPBSRZ - backspace record
TPREWZ - rewind
TPEØFZ - write EØF
TPGETZ - read record
TPCHKZ - check input record
TPPUTZ - write record
TPWTEZ - wait on I/O
TPFSFZ - forward space file

The write-up contains descriptions of the use and calling sequences, with examples, for the above entry points. In addition, a complete sample program is included at the end of the write-up.

OUR OWN TELEVISION SHOW

Dr. Michael Pleck and Mr. Izim Okeren of the General Engineering Department have recently finished a video-tape program of the DCL computing facilities. The tape is used to acquaint students in the engineering graphics course with our computer and its plotting facilities. Bob Skinner, one of our system programmers, provided the commentary for the tape, which runs about 15 minutes.

DID YOU KNOW?

We have a new addition to our terminal family--Agriculture now has a 2780. Counting the six other 2780's and Civil Engineering's Burroughs B5500, we now have a total of eight terminal installations on campus.

NEW WATFIV AVAILABLE

The WATFIV compiler on HASP has been updated to Version 1, Level 2. A description of the corrections

and new features is available for inspection in the Consulting Office, and a new version of the WATTIV users guide will be ready soon.

A CLASS DATA SET BY ANY OTHER NAME...

Instructors creating class data sets on user disk packs (UIUSRx) should be aware of the simplified naming conventions. The data sets should be named using the course name and number as specified on the Problem Specification (PS) form.

e.g.

DSNAME=USER.coursennn.name

where "course" is the course name (maximum of five letters) and "nnn" is the three digit course number

or

DSNAME=USER.course.Cnnn.name

where "course" is the course name (maximum of eight letters) and "Cnnn" is composed of the letter "C" followed by the three digit course number

These naming conventions eliminate the need for renaming the data sets each semester to correspond to the new PS number. All that is required is that the disk space requested each semester on the new class PS form be equal to or greater than the amount of space used by the data sets for that class.

DID YOU KNOW?

Jim Block, one of our service programmers, just finished a project for Dr. Bateman of the Mathematics Department. Jim developed a quadruple precision division routine for use with FORTRAN.

FROM PLØTTZ TO GRAPHZ

The subroutine PLØTTZ has been rewritten to make it more efficient and to correct some known errors. The new version of PLØTTZ has also been given a new name, GRAPHZ. The two names are compatible, however, and anyone who is now using the name PLØTTZ need not make any changes in his programs. The new version, GRAPHZ, is a much better routine, however, as the following comparison of the two versions illustrates:

1. PLØTTZ: written in FØRTPAN
GRAPHZ: written in ASI--executes
faster and takes less storage
2. PLØTTZ: error in scaling routine
GRAPHZ: error corrected
3. PLØTTZ: no facility for labelling axis
or specifying plot length
GRAPHZ: can label X and Y axis and
specify length of X axis
4. PLØTTZ: no error messages
GRAPHZ: error messages and warnings
added to tell the user when
he has called the routine
incorrectly

FREE LOCKERS!

We have just had a few lockers returned to us by users who do not need them. Anyone doing research who needs a locker may inquire in 185 DCL concerning the procedure for obtaining one. Why not get a locker and save yourself the trouble of carrying card decks all over campus?

DID YOU KNOW?

You can have programming done by Computer Center personnel for as low as \$2.45 an hour. Phone 333-6133 if you are interested.

INQUIRY STATION

NOTE: Entries for the INQUIRY STATION originate with the "User Comment and Suggestion Form" available from the Information Desk and Consulting Office, and with the form contained on the last page of each issue.

Question: What is happening with respect to obtaining release 3 of SNOBOL-4?

Reply: Release 3 of SNOBOL-4 is now on the system. Also version 1 of SPITBOL, a WATFIV-like SNOBOL, is on the system. Questions concerning the documentation for these systems should be directed to the Consultants.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

An Introduction to Probability Theory and its Applications, W. Feller

Computer Organization, I. Flores

Critical Path Methods in Construction Practice, J. M. Antill and R. W. Woodhead

Diakoptics and Networks, H. H. Happ

Electric Money: Evolution of an Electronic Funds-Transfer System, D. W. Richardson

Numerical Algorithms: Origin and Applications,
B. W. Arden and K. N. Astill

Ordinary Differential Equations, J. K. Hale

Practical Systems Analysis, A. Chandor, J. Graham,
and R. Williamson

The Applications of Holography, H. J. Caulfield
and S. Lu

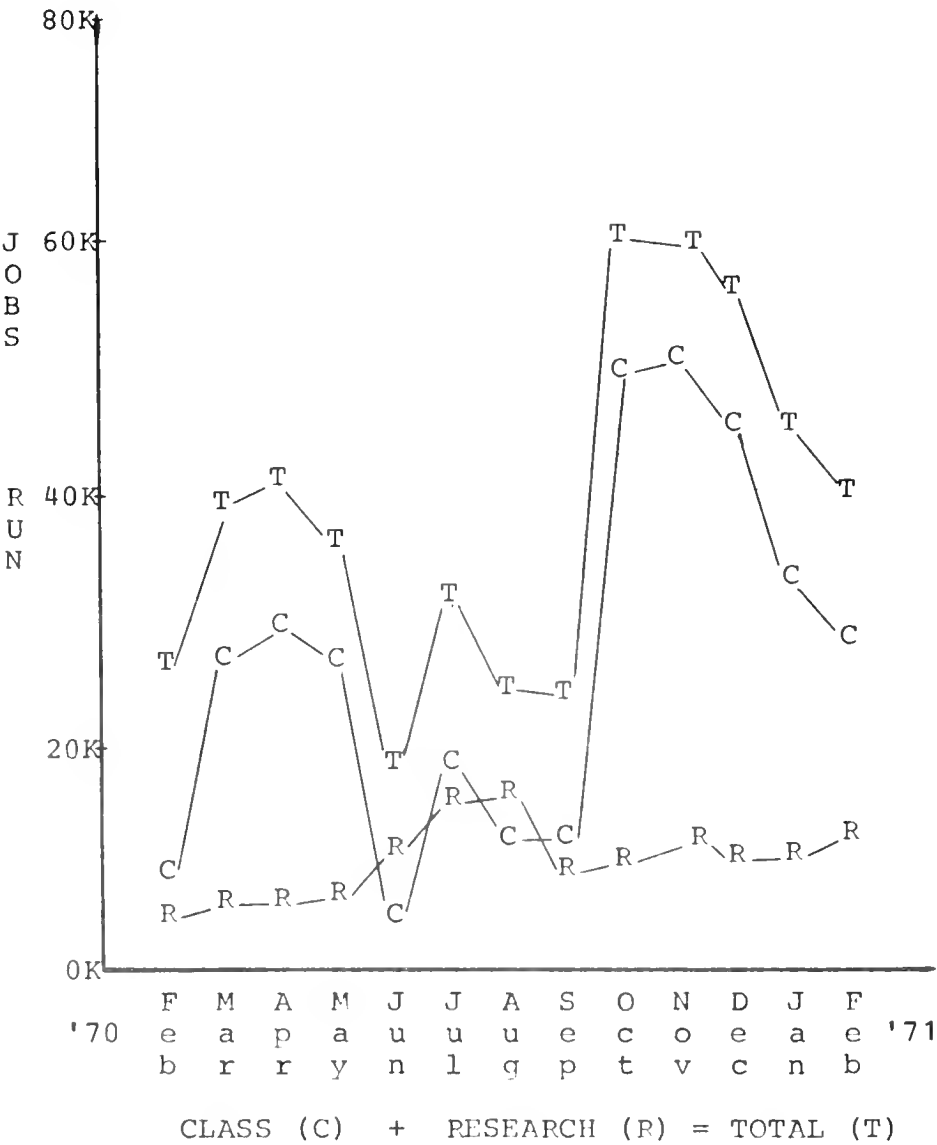
The Approximate Minimization of Functionals,
J. W. Daniel

FACULTY SHORT COURSES Spring, 1971

| COURSE: + WEEK OF | INTRO COMP FROG L.A. | ELEM FORT | INTER FORT | ADV FORT | HASP O/S | JCL | INTRO ASM | ASM | UTILITIES | CALCOMP | EXPTS | FLAG | REDOSSING | FEPMAC |
|-------------------------|-------------------------------------|-------------------|------------------------|-------------------|--|--------------------|--------------------------------------|--------------------|-------------------|--|------------------------------------|-----------------------|-------------------------------------|--------------------------------------|
| Mar. 29 | MF 1-3 P.M. 115 DCL SMITH | | | | | | | | | | | | MF 1-3 P.M. 239 DCL WILMOT | |
| SPRING VACATION | | | | | | | | | | | | | | |
| Apr. 12 | | MF 1-3 P.M. | MF 1-3 P.M. | | | | | | MF 1-3 P.M. | | | | | |
| Apr. 19 | | 115 DCL SMITH | 252-A DCL CLANCY | | | | | | 239 DCL WILMOT | | | | | MF 10-11 A.M. 239 DCL FURDY |
| Apr. 26 | MF 7-9 P.M. 115 DCL MICHEL | | MF 1-3 P.M. | | MF 10-12 A.M. 239 DCL SKINNER | | | | | | MF 3-5 P.M. 237 DCL BLOCK | | | |
| May 3 | | MF 7-9 P.M. | 115 DCL ZIDA | | | MF 10-12 A.M. | MF 1-3 P.M. 239 DCL SUBJECT | | | | | | | |
| May 10 | | 115 DCL MICHEL | | MF 1-3 P.M. | | 239 DCL SKINNER | | MF 1-3 P.M. | | MF 1-3 P.M. 252-A DCL ZIDA | | MF 10-12 A.M. | | |
| May 17 | | | | 115 DCL EITZEN | | | | 239 DCL SUBJECT | | | | 252-A DCL PERNA | | |

March, 1971

THE 360 RUNS



IF YOU COMPLAIN, WE'LL ANSWER

The Computer Center invites your comments, complaints, and suggestions regarding the facilities and services offered. We will reply directly to all comments if a return address is provided. You may use the space below and return this page to Mr. Merl Foster, 175 DCL. If you have an urgent problem and all the normal channels have failed, give Merl a call at 333-6618. He'll try to set things straight for you.

SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE

Additions or deletions to our mailing list may be made by completing and returning this page to Editor, ILLINET OUTPUT, 173A DCL.

Please (include, delete) my name from the ILLINET OUTPUT mailing list. Check here to register an address change. []

Name-Title: _____

Address: _____

EDITOR..... Nick Smith

PUBLISHED TEN TIMES YEAPLY BY THE DEPARTMENT OF
COMPUTER SCIENCE, UNIVERSITY OF ILLINOIS AT URBANA-
CHAMPAIGN, URBANA, ILLINOIS. 61801



University of Illinois at Urbana-Champaign... Department of Computer Science

Netnet Output

Dean R. B. Downs
222 Library

10:84
26



Illinet Output

University of Illinois at Urbana-Champaign-----Department of Computer Science

Vol. 3, No. 4

April, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

| | |
|---|----|
| SOMETHING FOR NOTHING! | 2 |
| CALCOMP DONATIONS REQUESTED | 2 |
| DUMPING PL/I | 2 |
| THE ANSWERING SERVICE NO LONGER WILL | 3 |
| SKINNY PØL1Z | 4 |
| RECENT SUBROUTINE LIBRARY CHANGES | 4 |
| PROGRAMMING JOBS | 5 |
| SYS1.QUIZ.INTRO | 5 |
| INQUIRY STATION | 5 |
| SELECTED LIBRARY ACQUISITIONS | 7 |
| THE 360 RUNS | 10 |
| IF YOU COMPLAIN, WE'LL ANSWER | 11 |
| SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE | 11 |

THE LIBRARY OF THE

MAY - 1 1971

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

SOMETHING FOR NOTHING!

IBM manuals for the 360 are available without charge to users having a research problem specification number. Unfortunately, we cannot distribute manuals to users who have only class numbers. Instructors who expect to need IBM manuals for their students are requested to notify the bookstores to stock them with other text books. Manuals not available in the bookstores may be purchased through the UGSA book service.

Research users who wish to obtain manuals from the Computer Center should do so through the Consulting Office, 166 DCL.

CALCOMP DONATIONS REQUESTED

Short CalComp jobs are being collected in order to have sufficient test material for future CalComp subroutine changes. Anyone who wishes to contribute a job should bring a copy of the deck and data, if any, to Mike Clancy, 31J DCL. Any donations will be greatly appreciated.

DID YOU KNOW?

Iowa State University requires that all instructors intending to use their 360/65 for class work attend a one hour seminar before applying for a computer number.

DUMPING PL/I

A modified PL/I library routine is now available which will ABEND a program with the completion code USER=1000 and allow a core dump whenever any of the following terminations occur:

1. execution of a STØP,
2. execution of an EXIT,
3. raising of any ERRØR condition without an ØN ERRØR recovery,
4. raising of any ERRØR condition with an ØN ERRØR unit which does not return control to the actual program. That is, the following statement would prevent a termination ABEND:

ØN ERRØR GØ TØ FIX;

To use this feature, it is necessary to specify the SYS1.PL1DUMP data set under the SYSLIB DD statement for the loader or linkage editor. It is catalogued and must be concatenated in front of the usual data set, SYS1.PL1LIB. When using locally catalogued procedures such as EXEC PL1LDGØ this can be done using the LIBFILE parameter as shown below. In all cases the core dump will be printed only if the following card is included:

```
//GØ.SYSUDUMP DD SYSØUT=A
```

The following is a complete example:

```
/*ID <ID card information>
// EXEC PL1LDGØ,LIBFILE='SYS1.PL1DUMP'
//PL1.SYSIN DD *
      <PL/I source program>
/*
//GØ.SYSUDUMP DD SYSØUT=A
```

THE ANSWERING SERVICE NO LONGER WILL

In August of 1970 a touch-tone inquiry facility was integrated into our 360/75 system. We indicated at that time that once enough touch-tone phones had been installed on campus, the tape-recorded answering service would be discontinued. We are now planning to

remove the answering service on July 1, 1971. Any user interested in requesting the installation of a touch-tone phone should contact Mr. Merlin Foster, 333-6618.

DID YOU KNOW?

A computer user at the University of British Columbia who was losing money by unauthorized use of his number simply reported it as theft to the Royal Canadian Mounted Police.

SKINNY PØL1Z

A new version of PØL1Z has been put in the UOI Subroutine Library. The new PØL1Z requires 176 fewer bytes of core and executes faster than the old version. No change was made to the calling sequence.

RECENT SUBROUTINE LIBRARY CHANGES

A new routine, SCSLEZ, has recently been added to the UOI Subroutine Library. SCSLEZ solves a complex system of simultaneous linear equations using the LU decomposition method with partial pivoting. A copy of the write-up may be obtained at the 360/20 facility in the usual manner.

Also, the routine PLØTT has been deleted in order to economize space on FØRTUØI.

DID YOU KNOW?

The Consultants, 166 DCL, now have 16 one-page handouts and 18 multi-page user's guides free for the asking.

PROGRAMMING JOBS

The Computer Center provides a referral service for users interested in doing programming or hiring programmers. The Information Desk in the DCL lobby maintains a register of users who are interested in working as programmers and anyone interested may submit an application. These forms are kept for six months and are made available to anyone wishing to hire programming help. Although we do not endorse or recommend the applicants on file nor set pay scales, we do try to make it easier for the right employer and employee to get together.

SYS1. QUIZ. INTRO

Our cataloging program in the library has run amuck and recataloged the following works of fiction under somewhat unusual (and computer-oriented) names. Can you straighten them out? For example, "Closed Loop" by Jean Paul Sartre is, of course, No Exit. For answers, see page 9.

1. Advice to the User, by W. S. Gilbert
2. OS Nucleus, by Maxim Gorki
3. Failure to Sell a 370 to the U. of I.,
by Arthur Miller
4. Brand X 2301, by Gunther Grass
5. Cleaning the Punch, by James Hilton
6. Burned-out Indicator, by Rudyard Kipling
7. Final Release of OS, by George Orwell
8. I Turned My Job in Today, by Lilian Roth

INQUIRY STATION

NOTE: Entries for the INQUIRY STATION originate with the "User Comment and Suggestion Form" available

from the Information Desk and Consulting Office, and with the form contained on the last page of each issue.

Question: The new consultant wall denies user access to the pencil sharpener after consulting hours. Is there any solution?

Reply: Yes. We are having a pencil sharpener mounted on the wall in the keypunch area (room 131) so you can sharpen pencils to your heart's content.

Suggestion: The operators who work in the routing room during the night should pick up those jobs printed at the Self-Service facility after midnight. This would avoid losing the output of users who may not want to wait for it.

Reply: This facility is kept on a Self-Service bases primarily for users who wish to obtain their output as quickly as possible at night in order to make several runs. Users who do not want their output immediately should submit their decks at the routing windows and their output will be available there in the morning. This way there should be no missing output and users of the Self-Service facility can get the fastest possible turnaround.

Complaint: The accumulation of used and unused cards on the keypunches is a nuisance and leads to much waste. For example, on Tuesday, March 16, I noticed unpunched cards in a waste can. Taking about five minutes, I sorted out about 200 unused cards with less than 100 punched cards. Someone in an obvious fit of anger had cleaned off a keypunch without sorting the cards. From other random collections ready for the trash I have found a ratio of used : good cards of roughly 3:1 to 1:2. From the looks of the cards, they are largely from class problems. Couldn't instructors make a very serious point to their students of this problem and its inherent waste? Could the ILLINET OUTPUT make a point of it to other users?

April, 1971

7

Reply: We would like to urge all users to please be less careless about their card usage. Not only does the situation result in a cluttered work area and increase our waste problem, but it also increases our overhead costs which necessitates increasing our rates. We are concerned about this problem and are attempting to find a solution. We are pleased that many users share our concern.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Zener and Avalanche Diodes, C. D. Todd

A History of , P. Beckmann

Advances in Information Systems Science, J. T. Tou

Mathematical Tools for Modern Physics,
J. F. Schule

Introduction to the System Life Cycle, M. L. Rubin

Communicating with a Computer, A. B. Bolt and
M. E. Wardle

Optimization Theory for Large Systems,
L. S. Lasdon

Application of Decision Tables, H. McDaniel

Introduction to Computer Organization, Y. Chu

Data Structure and Management, I. Flores

Recursiveness, S. Eilenberg and C. C. Elgot

Man Computer Problem Solving, H. Sackman

Foundations of Modern Analysis, J. Dieudonne

Operating System Analysis and Design, L. J. Cohen

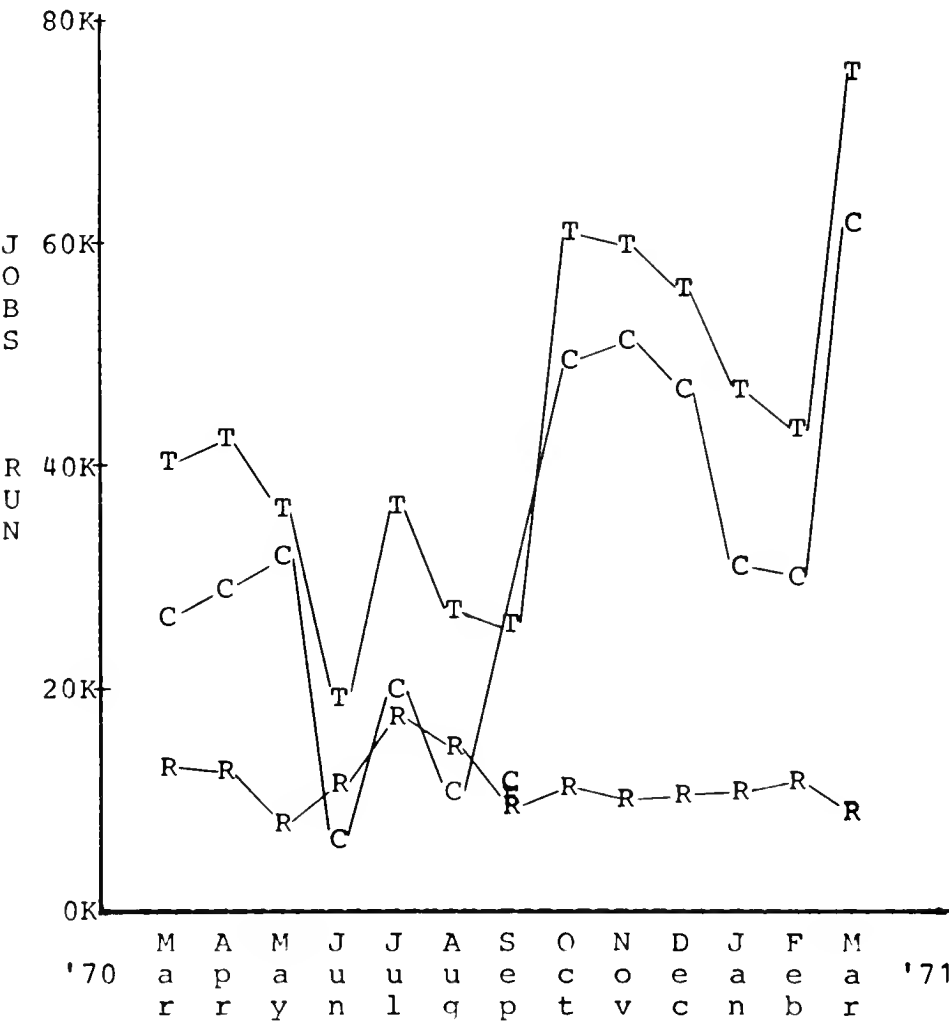
Functional Analysis and Related Fields,
F. E. Browder

Advanced Programming (Programming and Operating
Systems), H. Katzan, Jr.

ANSWERS TO SYS1.QUIZ.INTRO

1. Patience
2. The Lower Depths
3. Death of a Salesman
4. The Tin Drum
5. Goodbye, Mr. Chips
6. The Light that Failed
7. 1984
8. I'll Cry Tomorrow

THE 360 RUNS



CLASS (C) + RESEARCH (R) = TOTAL (T)

IF YOU COMPLAIN, WE'LL ANSWER

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University of Illinois at Urbana-Champaign.....Department of Computer Science

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2001 Library
5 Copies

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Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 3, No. 5

May, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

| | <u>PAGE</u> |
|---|-------------|
| COMPUTING SERVICES OFFICE | 2 |
| TOURS--ALL EXPENSES PAID! | 3 |
| COUNTING I/O REQUESTS | 4 |
| WE'VE SHARED | 5 |
| SYS1.QUIZ.VOL1 | 5 |
| LOTS OF SUBROUTINE LIBRARY CHANGES! | 6 |
| A PROGRAMMING LANGUAGE | 7 |
| THE SYSTEM MAY CRASH, BUT CALCOMP LIVES | 8 |
| RESEARCHERS, BEWARE! | 9 |
| PAPER TAPE RETURNS | 9 |
| BUSY, BUSY, BUSY | 10 |
| INQUIRY STATION | 11 |
| SELECTED LIBRARY ACQUISITIONS | 12 |
| THE 360 RUNS | 14 |
| IF YOU COMPLAIN, WE'LL ANSWER | 15 |
| SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE | 15 |

LIBRARY OF THE
JUN 22 1971
UNIVERSITY OF ILLINOIS

COMPUTING SERVICES OFFICE

The Board of Trustees of the University of Illinois has authorized a change in the administration of the Service Area of the Department of Computer Science. The following is a portion of a statement presented at the October 21, 1970 Board Meeting:

"The Chancellor at the Urbana-Champaign campus has recommended the establishment of an Office of Computing Services in the Office of the Vice Chancellor for Academic Affairs.

"The service computing facilities on the Urbana-Champaign campus are currently administered by the Department of Computer Science. This arrangement is a rare one; such services usually report to an administrator whose scope is wider. The situation is a natural outgrowth of the origin of computing services at Illinois which were provided in the early fifties on the research machines developed and built in the Digital Computer Laboratory. These projects began almost a decade before computers were extensively introduced and exploited in other universities.

"The decade of the sixties saw two parallel developments in the Digital Computer Laboratory. On the one hand, as the service computing load grew, it was shifted to large commercial equipment and it became an essentially professional operation whose aim has become to deliver a service to the campus-wide community. On the other hand, the research and teaching aspects of the Laboratory followed the nationwide evolution of the discipline of computer science which has resulted in the current Department of Computer Science.

"The question of separating the academic Department of Computer Science from the campus-wide provision of professional computer service has been raised from time to time over the past several years. All administrative officers directly concerned have

May, 1971

3

discussed the matter extensively and have agreed that concrete steps to effect separation should be taken as soon as possible. Specifically, the service portion of the Department of Computer Science would be administered by an Office of Computing Services in the Office of the Vice Chancellor for Academic Affairs. A Director of Computing Services would head this new office."

This change is now official and results in the Service Area being administratively separated from the Department of Computer Science and established as an independent organization named the Computing Services Office (CSO). Professor J. N. Snyder has been named acting director for CSO, and it is expected that a permanent director will be named in the near future.

As the Computing Services Office, we will still be physically located in the Digital Computer Laboratory at the corner of Romine and Springfield in Urbana.

With our new name will come renewed attempts at improving our services.

TOURS--ALL EXPENSES PAID!

Starting May 1 we are instituting a slightly new procedure for touring our Computer Center. From now on, to arrange a tour you can simply call the Information Desk (333-6465) and the girl there will take down the pertinent information. We will provide tours for classes or any interested groups. We would appreciate a week's notice if possible.

All general tours will now be conducted by the Operations personnel under the direction and coordination of Gary Bouck. Any special tour problems or requirements may be referred directly to Gary (333-6145).

Our tours come highly recommended, as you will note from the following comments made by some sixth-grade students who recently toured our facility:

"Thank you for the tour of the computer lab. I found it hard to believe. It was very exciting to watch the computer run. I enjoyed it very much thank you."

"Thank you for the tour. I loved the key punch. It has encouraged me to take typing lessons. Your computer is a great artist."

"Thank you very much for the tour through the computer lab. It was very exciting especially when I got to operate the key punch operator. I think now that I could operate a key puncher."

DID YOU KNOW?

The Computer Center receives computer newsletters from about 25 different universities in the United States and Canada.

COUNTING I/O REQUESTS

The method of counting input/output requests has been modified. In the past, I/O requests that were made by the supervisor (for example, in fetching programs into core: LINKs, LØADS, etc.) were not counted; now these I/O requests will be counted. For most jobs the increase will be insignificant (about 3-10 more I/O requests per job step). However, jobs which are heavily overlayed and do many calls from one overlay to another will experience a significant increase in I/O requests.

WE'VE SHARED

Larry Chace, Greg Eitzen, and Bob Skinner of our system programming staff attended the recent SHARE conference held in Los Angeles March 8-12. SHARE is an organization of 815 users of large, scientific IBM computers. Approximately 1375 delegates attended the March meeting.

Our three delegates brought back summaries of 36 meetings that have been compiled into a final 65 page report. The report contains sections on interactive systems, system measurement, and HASP. There is also a miscellaneous section covering topics like budgeting, and general installation management problems.

Our delegates did an excellent job and have provided us with a great deal of information, both technical and non-technical, which we hope to use to further improve our services.

SYS1.QUIZ.VOL1

Our cataloging program in the library has run amuck and recatalogued the following works of fiction under somewhat unusual (and computer-oriented) names. Can you straighten them out? For example, "Closed Loop" by Jean Paul Sarte is, of course, No Exit. For answers, see page 13.

1. First Compilation, by William Shakespeare
2. How to Get a Thesis Run, by George Bernard Shaw
3. Divide Check, by William Shakespeare
4. Location 50 Hex, by Carson McCullers
5. Abend 806, by James Baldwin

6. CSO Budget, by Stendhal
7. Wait State F05, by Leon Uris
8. Programmer's Working Hours, by Eugene O'Neill

LOTS OF SUBROUTINE LIBRARY CHANGES!

The subroutine library group has been very busy as you can see from the following changes to the library.

A new write-up for DGEARZ is now available. The write-up is easy to understand and includes a complete sample program showing how to use DGEARZ.

The following routines have been revised to correct known errors: CHØL2Z, GRAPHZ, TPIØZ, and TRAUBZ. The routine TPANLZ has been deleted in order to economize space on FØRTUØI.

Users of TPIØZ who are using the optional error return parameter of the open routine will now need to add a third parameter to the call. This parameter, one word in length, is set to a hex completion code when an error occurs. The completion code, which defines the type of error, is explained in the event control block section of the IBM manual, System Control Blocks (GC28-6628). Users of TPIØZ who are not using the error return parameter of the open routine need not make any changes to their program.

Also, the following new routines have been added to the library:

1. DIFEQZ - Subroutine which finds solutions of a system of first order ordinary differential equations. A multistep predictor corrector method is used whose order is automatically chosen by DIFEQZ as

the integration proceeds. Either an Adams method or methods suitable for stiff equations can be selected.

2. IANDZ - Arithmetic function subprogram to form the logical 'AND' of two input arguments.
3. IØRZ - Arithmetic function subprogram to form the logical 'ØR' of two input arguments.
4. IXØRZ - Arithmetic function subprogram to form the 'EXCLUSIVE ØR' of two input arguments.
5. NØTZ - Arithmetic function subprogram to form the logical 'NØT' of an input argument.
6. IPARMZ - Program which finds the number of parameters passed to a FORTRAN subroutine.
7. MAT2Z - Program which generates an N by N real symmetric tridiagonal test matrix, its inverse, eigenvalues, eigenvectors, determinant, and condition number with respect to the Euclidean norm.

DID YOU KNOW?

A new version of FØRMAC has been put on the system. The new version corrects some errors that existed in the previous version.

A PROGRAMMING LANGUAGE

We are currently in the testing stages of implementing a new subsystem, APL. APL, A Programming Language, is becoming widely used throughout the

United States. The following brief description appeared in the April, 1971, NEWSLETTER of the University of Missouri Computer Center:

"Originally developed at Harvard by simplification and unification of conventional mathematical notation, APL is now available in interactive mode on the IBM S/360 (models 40 and up), IBM 1130, IBM 1500, UNIVAC 1108, Burroughs B5500, XDS SIGMA 7 and the CDC 3600.

"As an indication of the level of interest in APL, a demonstration by its inventor, Ken Iverson, reportedly drew 500 attendees at the SHARE meeting in Denver in March, 1970.

"APL has been used to teach elementary mathematics in high schools; to teach APL itself to over 3000 students; to teach electrical engineering, particularly systems design and specification; to teach numerical analysis and statistics; and to perform inventory control. APL is now offered by at least four time-sharing companies."

Anyone interested in learning more about the proposed APL facilities here at CSO may inquire about them in the Consulting Office.

THE SYSTEM MAY CRASH, BUT CALCOMP LIVES

A facility for protecting CalComp plots from system crashes is now available. CalComp users are requested to checkpoint their output periodically, to make best use of this facility. Checkpointing is done by the statement

CALL CCP1BA

This can be done as many times in a job as desired. Any job which consists of a number of independent

drawings ought to be checkpointed at the beginning of every drawing.

If the system goes down while a given job is plotting, the paper will be advanced to an unused portion and plotting will be resumed at the last checkpoint. Note that this would result in an incomplete drawing (followed by the completed version of the same drawing) in the output.

RESEARCHERS, BEWARE!

We have listed below those dates on which Computer Science 101 and 105 have machine problems (MP) due. This should give you research users a better indication of when the machine will be busy and, consequently, help you plan your work better.

| | | |
|------------|--------|-----|
| May 6 | CS 101 | MP6 |
| May 13, 14 | CS 105 | MP6 |
| May 19 | CS 101 | MP7 |
| May 27, 28 | CS 105 | MP7 |

PAPER TAPE RETURNS

Users who have ASCII coded paper tapes may now have them converted to cards using the Elliot optical paper tape reader, which is now connected to the IBM 1800 in the Psychology Building. The paper tape is read on the 1800 by the routine PAPER, and the data is written onto a magnetic tape. This magnetic tape may then be brought to DCL where the 360 routine TTAPE will convert the ASCII characters to EBCDIC and punch them.

Users of this facility will be required to supply their own magnetic tapes. Since the Psychology 1800 is a "hands-on" computer, users must also operate the 1800 themselves. A list of procedures will be available in the 1800 machine room, Room 453 in the Psychology Building. Also, a writeup explaining the use of the 360 program TTape is available from the Consulting Office. Any questions or comments about the above procedure or the programs should be directed to Paul J. Zima, Room 199 DCL, or to the Consultants, Room 166 DCL.

DID YOU KNOW?

Jim Block, one of our service programmers, is currently working on a program for Dr. Osborn of the Finance Department to analyze financial transactions of a British firm.

BUSY, BUSY, BUSY

Our Research and Programmer Education Group, under the direction of Tom Allen, is continuing to investigate various system improvement possibilities. They are currently conducting feasibility studies of the following:

1. Replacing our present bulk core with a version four to six times faster. Consideration is being given to the costs of various core configurations and their effect on throughput.
2. Obtaining an IBM 3505 card reader and 3525 interpreting card punch which would replace the IBM 360/20.
3. Methods of protecting system data sets.

4. Various methods of monitoring individual usage of class PS numbers.

INQUIRY STATION

NOTE: Entries for the INQUIRY STATION originate with the "User Comment and Suggestion Form" available from the Information Desk and Consulting Office, and with the form contained on the last page of each issue.

Question: To whom should a student report a keypunch which is malfunctioning so it can be promptly repaired and the number of keypunches in operation be kept at a maximum?

Reply: You can simply tell anyone of the keypunch personnel and she will see that the keypunch is repaired. Also, questions you may have about the proper operation of the equipment in that area may be directed to the same individuals.

Comment: I think that jobs which are FILE only should be able to use EXPRESS.

Reply: If we allowed FILE jobs to be processed on EXPRESS and PLØRTS had to be down for some reason such as maintenance, then the EXPRESS system would become inactive until PLØRTS came up again. Consequently, we do not feel we can justify allowing FILE to run on EXPRESS.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Approximate Methods for Solution of Differential and Integral Equations, S. Mikhlin and K. Smolitskiy

Software Engineering, J. Tou

Nonlinear Programming, J. Rosen, O. Mangasarian, and K. Ritter

Nonlinear Networks and Systems, R. Clay

Numerical Solution of Partial Differential Equations-II, B. Hubbard

Numerical Solution of Ordinary Differential Equations, L. Lapidus and J. Seinfeld

Models of Human Memory, D. Norman

Fluidics (Components & Circuits), K. Foster and G. Parker

Progress in Optics, E. Wolf

Interactive Graphics for Computer-Aided Design, Prince

The Information Machines-Their Impact on Men and the Media, B. Bagdikian

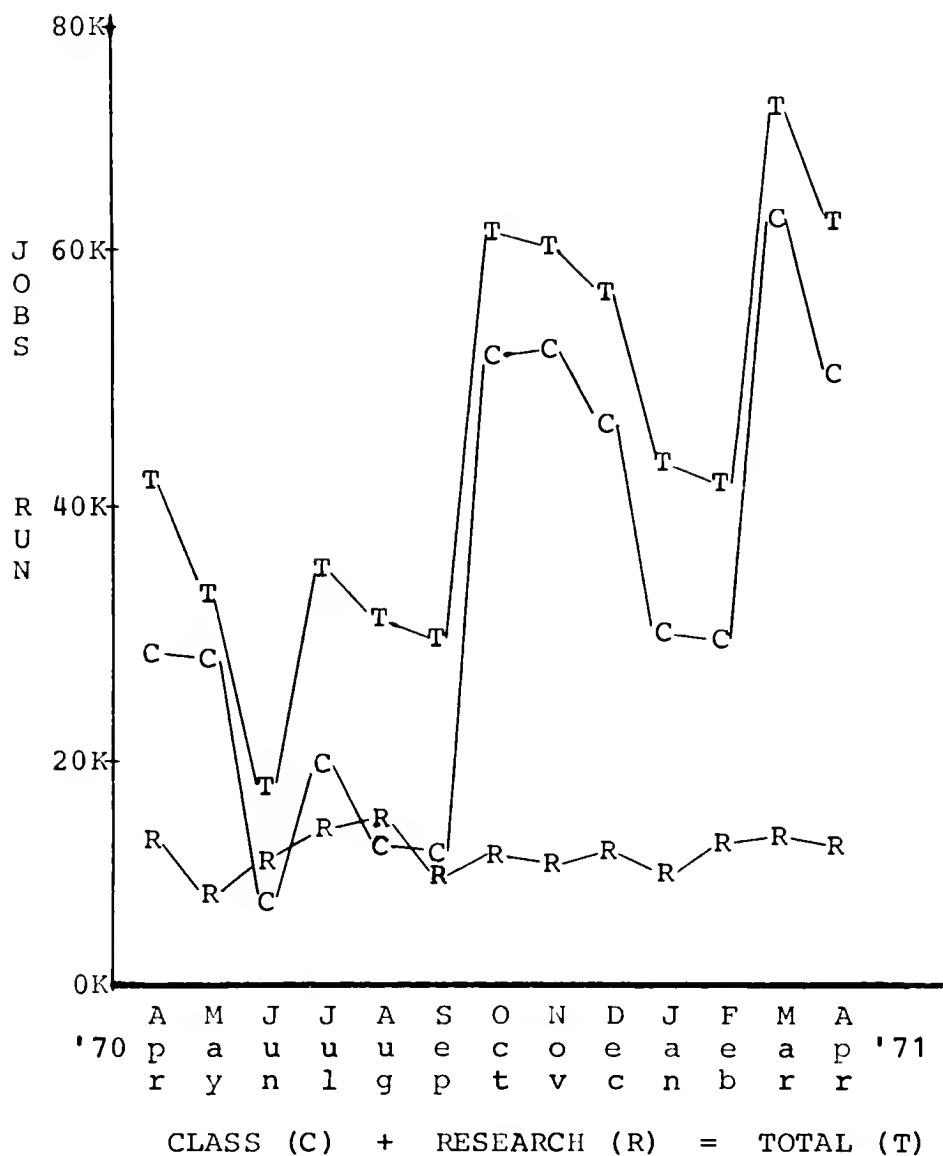
Introduction to Digital Computer Design, Sobel

Statistical and Computational Methods in Data Analysis, S. Brandt

Principles of Combinatorics, C. Berge

ANSWERS TO SYS1.QUIZ.VOL1

1. Comedy of Errors
2. Doctor's Dilemma
3. Much Ado About Nothing
4. Clock Without Hands
5. Nobody Knows My Name
6. The Red and the Black
7. Armageddon
8. Long Day's Journey Into Night

THE 360 RUNS

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SEND US YOUR NAME AND WE'LL FOLLOW YOU ANYWHERE

Additions or deletions to our mailing list may be made by completing and returning this page to Editor, ILLINET OUTPUT, 173A DCL.

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EDITOR.....Nick Smith

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June, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

| | |
|--|----|
| NOTICE! | 2 |
| NEW CSO SYSTEMS | 2 |
| PS FORM AND SYSTEM CHANGES | 6 |
| NEW ID CARD DEFAULTS AND JOB CLASSES | 8 |
| NEW PLOTS SYSTEM | 9 |
| THE STRIPED ID CARD GOES | 12 |
| SOUPEX! | 12 |
| CATALOG OF USER DATA SETS | 14 |
| A NEW EXPRESS | 14 |
| APL/360 IS HERE | 16 |
| CONVERSION OF COBOL F TO 360 AND COBOL | 18 |
| UOI SUBROUTINE LIBRARY CHANGES | 18 |
| SELECTED LIBRARY ACQUISITIONS | 20 |
| 360 SCHEDULE OF OPERATIONS | 22 |
| ILLINET OUTPUT NEEDS YOUR NAME! | 23 |

NOTICE!

We are currently revising our mailing lists. If you wish to continue receiving the ILLINET OUTPUT, please complete and return the last page.

NEW CSO SYSTEMS

Some important system changes are being carried out this summer. Among them are new releases of OS/360 and HASP. Frequently, our system problems are attributable to residual bugs in HASP and OS/360. With each release of HASP and OS, we trade old problems for new ones. Generally there is forward motion: two steps forward for every one step back. However, some releases of OS have had more problems than their predecessors, e.g., the initial mailings of Release 18.

Many users may be asking themselves "When will it all end?" The answer is pretty clearly "Never". There will always be new versions of compilers, new features to add to existing operating systems, new I/O devices to support. As part of "unbundling", IBM insists that installations using OS/360 remain no more than two and a half releases back-dated, e.g., when Release 19.6 is available, customers must abandon Release 17 within three months. You may ask, "How can IBM coerce its customers? If our installation is content with our current release can we be forced to move to a new release, potentially with more problems than the current release?" The answer is "Effectively yes"; IBM can withdraw free maintenance of their software if a customer uses significantly back-dated operating systems. They have not threatened us with such action; this has not been necessary, since we have stayed

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3

reasonably current. In fact, we have remained right up-to-date with respect to versions of HASP -- which are distributed independently of OS/360 -- because they have been uniformly better, with useful new features, as well as being consistently more reliable than preceding versions.

You should appreciate IBM's position: if customers chose to stay with back-dated versions of OS/360, IBM's trouble-shooting and service problems would multiply ten-fold. Also, IBM feels that customers must be prodded to accept progress; many installation managers would be sharply criticized for voluntarily moving from a firm release to a relatively unreliable one. Thus, IBM has established a uniform policy which ultimately preempts the installation manager's decision.

All this introduction is by way of announcing our imminent move to Release 20 of OS/360 and Version 3 of HASP. The target date for these changes is September 15.

Our systems staff has spent many third-shift and Sunday sessions testing and correcting this new system. Some corrections are supplied after distribution of the OS tapes, others are peculiar to the newest version of HASP, a few are peculiar to our local modifications of HASP. (As a matter of policy, CSO makes the fewest possible modifications to OS itself. By concentrating on HASP, we keep our locally-originated code in a single program, carefully documented and controlled by a single group.) Release 20 is continually updated as customers report in APARs (Authorized Programming Action Requests -- euphemism for "bugs") and receive PTFs (Program Temporary Fixes) in return. APARs corrected by Release 20 may be found in the Release 20 Guide, IBM Manual #GC28-6730-0. Our staff would appreciate your comments on new releases, old releases, and our policies for acknowledging, correcting, and documenting system problems. We have a three-cornered partnership: IBM, you, and us. IBM originates most of the system software, we originate a little, you

essentially none. IBM originates some of the corrections, we a few, you essentially none. However, you are the group who discover most of the system bugs in our environment. Whether the responsibility for fixing any particular bug is ours or IBM's, it is our consulting and systems staffs who receive your complaints and evidence. It is one of their primary responsibilities to screen the latter and pass on to IBM's specialists whatever is clearly IBM's software responsibility.

One question is not answered above: "Why does it take so long to develop a stable system?" The answer is simply "There are so many bugs in them. There have been hundreds, sometimes over 1,000, in each new release of the operating system." Each correction has to be individually tested -- generally on third-shift or Sunday -- to insure it will work in our environment. Why? Why not install a dozen -- or even hundreds -- of corrections at one time? There are two explanations: (1) the PTFs trickle in a few at a time; and (2) each PTF is essentially an experimental, temporary correction -- our experience has been that only 50-60% can be safely installed. Unsafe PTFs tend to make the system more fragile than before. Thus, the conservative approach followed by CSO (and most other large installations) is one-by-one testing and installation of PTFs.

Release 20 Changes of Interest to Users

| <u>Change</u> | <u>Pertinent Manual</u> |
|--|--|
| 1. Documentation: Extended Messages & Codes diagnostic information | (C28-6631) |
| 2. Documentation: Better JCL Manuals | Job Control Language Reference (C28-6704) Job Control Language User's Guide (C28-6703) |

- | | |
|--|--|
| 3. Documentation: Extensive revisions to manual | FØRTRAN IV Language (C28-6515) |
| 4. Support of System/370 Instructions | Assembler Language (C28-6514) Principles of Operation (A22-6821) |
| 5. New Assembly Language Instruction: WXTRN | Assembly Language (C28-6514) |
| 6. High-speed IEBCOPY Utility | Utilities (C28-6586) |
| 7. New data management macro instructions | Supervisor Services (C28-6646) Data Management Services (C26-3746) |
| 8. Default Tape Density for 7-track tapes to 800 BPI | Job Control Language Reference (C28-6704) |
| 9. Conversion for COBOL F to ANS COBOL | COBOL Difference (C28-6395) ANS COBOL (C28-6396) ANS COBOL Programmers Guide (C28-6394) COBOL To USA Standard COBOL Language Conversion (C28-6400) |
| 10. Support of ANS Tape Label | Tape Labels (C28-6680) |
| 11. In-stream procedures | JCL Language Reference (C28-6704) |

PS FORM AND SYSTEM CHANGES

Version 7 of the Problem Specification Form and version 6 of the Account Information Form are now available. These new versions are necessary because of changes in the 360 accounting system and the new default limits on the ID card (see article on page 8).

When a user applies for a Problem Specification number he now has four additional controls over improper use of his PS number. The system is now enforcing these controls.

- (1) The prime user can specify a dollar limit per job. Once specified, no job may be processed under that PS number that exceeds that limit, until a change form is submitted to change that limit. The cost of the job will be calculated from the estimates given on the ID card (for estimating CPU time cost, REGION=116K is used as the actual core used is not known) plus the cost of Setups and the number of cards actually read in. Once the deck has been read in and the job estimate has been calculated, this value will be compared against the dollar limit per job specified and the amount of money left in the Problem Specification number. If the job exceeds either, it will be "flushed" and the costs accrued so far, i.e., "cards read" and "cover charge", will be charged to the PS number (a flushed job is never charged for its SETUPS). The default for maximum \$/job will be \$3.00. Class PS numbers may only specify a dollar/job limit less than or equal to the default of \$3.00 per job. An instructor who feels that the maximum \$/job limit should be raised above the default limits must talk to Mr. Gerald P. Beck, Jr., Room 166 DCL, before formally submitting his request. Many times a problem presented to students

can, with technical advice, be revised in such a manner that the same pedagogical aim can be achieved with much less computer usage. This results in less impact on the system and better turnaround time for all CSO users.

- (2) The prime user can specify a limit on printed output from a single job. Once specified, no job may be processed under that PS number that exceeds the line limit, until a change form is submitted to change that limit. If the line limit value is exceeded by the line estimate on the ID card, the job is flushed and the PS number is charged "cover charge." The default for "maximum lines is 2000 lines.
- (3) The prime user may specify that SETUPS, i.e., tapes or disks to be mounted, are not to be allowed on the Problem Specification number. If the "No" box is checked, no SETUPS can be requested under this PS number. The default for "SETUPS" is Yes. NOTE: As in the past, SETUP cards are ignored under EXPRESS.
- (4) The prime user may specify if only EXPRESS runs are to be allowed under the Problem Specification number. If the "Yes" box is checked, runs under this PS number must all be made on Express. The default is to allow both HASP and Express jobs.

Each Problem Specification number presently recognized by the 360 system has had the four defaults listed above attached to it. However, these defaults may be changed at any time by submitting a Problem Specification change form. Only Problem Specification Form 7 and Account Information Form 6 can now be processed under the revised accounting system. Consequently, we can no longer accept older versions of

the two forms. Copies of the new forms can be obtained at the Information Desk, DCL lobby, or they will be sent through campus mail upon request if you call 333-6465.

NEW ID CARD DEFAULTS AND JOB CLASSES

New /*ID card defaults and job class boundaries are now in effect.

Unless specified differently by the user on the /*ID card, the following parameters will be assumed:

```
TIME=(,10)    (or equivalently, 360=10)
LINES=500
IØREQ=500
CARDS=0
```

The job class boundaries will normally be as follows:

```
Class A:          <= 100
      B:   100 < <= 750
      C:   750 < <= 3000
      D:  3000 < x
```

where $x = \text{TIME (in sec.)} + \frac{\text{LINES} \times 3 + \text{IØREQ} \times 10}{100}$

These boundaries can be changed by the computer operator. They will be changed, either up or down, from time to time in order to spread the current job load across the available classes. Most of the time, however, the above boundaries will be used.

Notice that the above job class boundaries do not apply to class X (Express).

NEW PLØRTS SYSTEM

We now have a new PLØRTS system with the following changes:

- (1) The CØPY, CØPYS, and CØPYE commands now have the general format

COMMAND filename n1 n2

where n1 and n2 are optional line number limits as used in the LIST command.

Example:

CØPY FILEX 1 20

copies lines 1 through 20 of FILEX into the currently open user file.

- (2) The charges are now printed out as the total charge since login.

Example:

CHARGES SINCE LØGIN: \$00.28

A new command, CHARGE, has been implemented which responds with the user's total charges since login.

- (3) The input lines are buffered. This means that while the user is waiting for an operation (such as a CØPY) to be completed, he may type in several more commands which will be processed when the current operation is complete. This should eliminate most #WAIT problems.
- (4) An online calculator written outside CSO has been borrowed and included in the new PLØRTS

system. A writeup explaining the use of this calculator is in the OPENMSG 2 file.

- (5) With the new PLØRTS system, it is possible to access files by running a HASP job rather than using a terminal. The JCL necessary to do this is:

```
/*ID
// EXEC   TSBATCH
//SYSIN DD *
        <input commands to PLØRTS>
```

Example:

```
/*ID PS=9999,DEPT=xxx,NAME=USER
// EXEC   TSBATCH
//SYSIN DD *
9999,USER
CAT
ØPEN  FILE1
1    /*ID PS=9999,DEPT=xxx,NAME=USER
2    // EXEC   DUMMY
CLØSE
RUN  FILE1
LØGØUT
/*
```

This feature will allow files to be accessed even when the PDP-7 is dead. The TSBATCH job is treated like a terminal, so all commands are valid.

- (6) PLØRTS may now be accessed by 2741 terminals with APL type balls. A new command

```
#APL
```

specifies that the APL translate tables are to be used.

The command #D A terminates the use of the APL translate tables and reverts to the use of the normal 2741 tables.

The alphabet A-Z, numbers 0-9, and the special characters = + - () , ; . : / are as marked for the APL keyboard.

In most cases, using the SHIFT key and an alphabetic key translates into the lower case letter. The exceptions are as follows:

| Combination | Prints | Translates to |
|-------------|-----------|---------------|
| SHIFT-F | $\bar{1}$ | $\bar{1}$ |
| SHIFT-K | $\bar{1}$ | $\bar{1}$ |
| SHIFT-M | | |
| SHIFT-P | * | * |
| SHIFT-Q | ? | ? |

Other special characters are translated as follows:

| Keyboard Marking | Translates to | Keyboard Marking | Translates to |
|------------------|---------------|------------------|---------------|
| X | ε | " | " |
| + | p | - | Q |
| ← | ! | ≤ | \$ |
| → | q | ≥ | % |
| [| φ | × | # |
|] | f | v | k |
| \ | └ | ^ | m |

DID YOU KNOW

There is an important message for all ILLINET OUTPUT readers on the last page of this issue.

THE STRIPED ID CARD GOES

In order that card wastage be minimized, CSO is reducing the types of cards it has stocked in the past. As soon as the in-house supply of data cards of various formats and colors have been depleted, CSO will stock only two types of cards. The cards punched on the 360/75 will continue to be natural data cards presently in use. Cards used for the IBM 360/20 and the keypunches will be a yellow data card. These cards will contain column markings at the top to aid FORTRAN and Assembler users.

The yellow-striped ID card will no longer be stocked by CSO. Users may begin using regular data cards for ID cards at any time. It is hoped that users will continue to use the yellow-striped ID card until the supply is exhausted, but this card will no longer be required to head an input deck that is submitted for processing. ID cards may be punched in any convenient left-corner-cut card form.

SOUPEX!

The University of Illinois Express Statistical System, SOUPEX, is the direct offspring of SOUPAC. SOUPAC was written and developed by the Computer Science Department of the University of Illinois at Urbana-Champaign to meet the statistical data processing requirements of this campus. As another service in meeting this responsibility, the SOUPAC Office has developed this smaller version called SOUPEX. As a result, it is now possible for the smaller scale statistical problems to be handled with the convenience offered by the Express System.

There are some slight differences in design philosophy between SOUPEX and SOUPAC; however, these changes are minimal and are made only in the interest of speed. On the other hand, many aspects have been retained. For example, organization of data decks in the two systems is identical, and this has been found to be of considerable advantage to our regular customers, since ability to set up data decks in one language quickly generalizes to the other.

The programs in SOUPEX are chopped and channelled versions of the identical programs in SOUPAC, and therefore, the two systems yield identical results. The only characteristics of SOUPAC which have been sacrificed in the interest of speed are flexibility of linking programs together, ability to specify options, and size of problems allowed. In particular, SOUPEX is restricted to 30 variables, and SOUPEX users must also meet the time, lines, and input card restrictions of the Express System. It must be emphasized that the accuracy of computations has not been compromised. The library of programs available on SOUPEX is also small, however it is felt that even this smaller program library is well capable of handling the immediate needs of a growing number of users.

SOUPEX is now available both on HASP and on EXPRESS. It can be invoked by:

```
// EXEC SOUPEX
//SYSIN DD *
    <SOUPEX parameter deck>
/*
```

This subset consists of programs to do correlations, frequency counting, missing data correlations, principal axis/principal components factor analysis, and varimax factor rotation, all for a maximum of 30 variables. The maximum time limit on Express is currently 10 seconds.

The details concerning running these programs have been published in a User's Guide, available from

the CSO Consultants in 166 DCL and from the Statistical Consultants in 138 DCL.

CATALOG OF USER DATA SETS

The catalog of USER data sets on UIUSR1 was recreated on Tuesday, June 1, 1971. All old entries were deleted and the catalog was rebuilt with entries for only those data sets on UIUSR1-6. Users may recatalog data sets themselves or bring a card, as described below, to the Consulting Office. There must be one card for each data set you want recataloged.

for disk:

CATLG VØL=2314=serial,DSNAME=name

for tape:

CATLG VØL=TAPE8=(serial,seq#),DSNAME=name

where serial is the serial number of the volume on which the data set resides, name is the fully qualified name of the data set, and (for tape data sets) seq# is the sequence number (file number) on the tape. The only blanks on this card must be just before and just after the word CATLG, and at the end of the card. The useful information on the card must not extend beyond column 71.

A NEW EXPRESS

A new version of Express has been added to the system. Added features and necessary control cards are:

- (1) the PDP-11 Assembler
 // EXEC PDP11ASM
 //SYSIN DD *
 .
 .
- (2) a card listing utility program
 // EXEC LIST
 //SYSIN DD *
 .
 .

Express also now has a new loader which is a version of the IBM loader. The differences between this version of the IBM loader and the one on the HASP system are as follows:

- (1) Unused core will be sprayed with the hex core constant '800F800F'.
- (2) The first word of the program will be at the beginning of a 2K block.
- (3) A preloaded, core resident I/O library will be used. All programs linked from this library will be so designated by a double asterisk on the left of its name on the loader map.

In addition, WATFOR has been deleted from Express. // EXEC WATFOR will result in processing by WATFIV. Express contains Release 2 of WATFIV. This corresponds to the WATFIV currently available on the HASP system.

Some of the interesting features Release 2 makes available in addition to correcting a number of known bugs are:

- (1) WATFIV will not accept multiple statement cards. (There is a program available in the WATFIV library called FIVPAK which can produce compressed WATFIV source decks;

these are producible only on HASP but runnable on either HASP or Express.)

- (2) Debugging aids among which are two new statements

DUMPLIST (similar to NAMELIST)
ØN ERROR GØTØ

- (3) On Express - WATFIV only, the \$NØLIST, \$LIST will be recognized in addition to \$PRINTØN, \$PRINTØFF. Therefore, no changes need be made to WATFOR decks previously run on Express.

For a full list of changes to WATFIV see the Consultants.

DID YOU KNOW?

The following appeared in the February, 1971 issue of the University of Calgary Data Centre Newsletter, THE BIG BYTE:

To: Editor, Big Byte

I would suggest putting the ICES STRUDL package onto System 2 and monitoring it via APL. This would give us APLle STRUDL on demand.

APL/360 IS HERE

APL/360 is a conversational terminal system that has been operational within IBM since the fall of 1966. APL/360 is based upon APL, the language first defined by K. E. Iverson in "A Programming Language" (John Wiley, 1962). It is an interpretive timesharing system that built upon the array operations and structural integrity of APL.

The system features of APL have the following characteristics:

- (a) Simple, uniform rules of syntax.
- (b) Use of common symbols for the ordinary arithmetic operations.
- (c) Free-form decimal input.
- (d) A large set of primitive operators.
- (e) Use of defined functions (programs) with the same facility and syntactic variety as primitive operators.
- (f) Automatic internal conversion of data representation; full double-precision arithmetic (16 decimal digits) when required.
- (g) A library structure built around "workspaces" that hold both data and programs.
- (h) An immediate-execution mode, completely free of irrelevant keywords.
- (i) A comprehensive set of system commands for managing workspaces and libraries, and other essential functions.
- (j) Tracing and debug facilities.

APL is a widely accepted system which has drawn a large audience of users because of its analytical power and mathematical structure.

APL uses the IBM 2741 terminal, with a special type ball for the APL character set. Stickers are available which may be applied to the typewriter keys to show the APL characters. The same terminal, with a standard type ball, can also be used with PLORTS and ATS. Guidance is available from the Consultants for users who wish to order terminals and telephone data sets.

Before using APL, a user must have his problem specification number entered into APL as a "user number". This is done by submitting an APL Application Form. These forms are available at the DCL Information Desk.

CONVERSION OF COBOL F to 360 ANS COBOL

This year, IBM is scheduled to drop support of its COBOL F compiler, which is to be replaced by 360 American National Standard COBOL, also known as USA Standard COBOL. Accordingly, when the next version of the operating system is installed it will contain the ANS COBOL compiler instead of COBOL F.

Users who anticipate conversion problems or who would like information (manuals, etc.) should contact the Consultants. A trial version of the ANS COBOL compiler and a Language Conversion Program will be made available in the present system in the near future.

DID YOU KNOW?

The PLORTS files under PS numbers which expired or were cancelled prior to June 15, 1971, were deleted from PLORTS on July 7, 1971.

UOI SUBROUTINE LIBRARY CHANGES

Four new routines have been added to the UOI Subroutine Library: SPL1Z, CFIT3Z, BROWNZ, DATIMZ.

- (1) Subroutine SPL1Z calculates the cubic spline function for use in spline interpolation.
- (2) Subroutine CFIT3Z fits a polynomial, $P(X)$, of degree specified by the user, to a set of N data points $(X(I), Y(I))$ in such a way that $\text{MAX}(\text{ABS}(P(X(I)) - Y(I)))$ for $I=1, N$ is a minimum. CFIT3Z improves upon and replaces a similar routine, CFIT2Z. At times, CFIT2Z can get into an infinite loop. The method used by CFIT3Z is slightly different and prohibits this. Consequently, CFIT2Z has been deleted from the subroutine library.

- (3) Subroutine `BROWNZ` solves simultaneous non-linear equations.
- (4) Subroutine `DATIMZ` returns date and time of day. One entry point, `TIMEZ` returns only the time of day. Another entry point, `DATEZ`, returns only the date. It is compatible with the old `DATEZ`, which has been deleted, but requires fewer bytes of storage.

Write-ups for these routines are available in the 360/20 room.

Routines `FRANCZ` and `IPARMZ` have also been revised.

The elimination at a future date of some of the Gauss Quadrature subroutines is under consideration. The reason is the superfluous number of point-weight sets which are in the library. It is thought that no one will be using a Gauss Quadrature formula with N (the number of function evaluations) less than 8, and that if a user does not achieve a desired amount of accuracy with the N he is using, he will want to double N . Therefore, the proposal is to have only those sets of points and weights in the library for which $N=8, 16, 32, 64$ (where available). This would result in the elimination of the following subroutines:

`PWN2Z` - `PWN7Z`
`PWN9Z` - `PWN15Z`
`PWN17Z` - `PWN18Z`
`PWN20Z` - `PWN21Z`
`PWN23Z` - `PWN39Z`
`PWN41Z` - `PWN47Z`
`PWN49Z` - `PWN-55Z`
`PWN57Z` - `PWN63Z`
`PWN65Z` - `PWN71Z`
`GQU3Z` - `GQU5Z`
`GQU7Z` - `GQU9Z`
`GQU11Z` - `GQU12Z`

The library would then consist of the following Gauss-Quadrature routines:

1. INTEGRAL (A TØ B) ØF F(X) dX N=8, 16, 32, 64
2. INTEGRAL (- ∞ TØ + ∞) ØF EXP(-X**2) *F(X) dX;
N=8, 16, 32, 64
3. INTEGRAL (0 TØ ∞) ØF EXP(-X) ,F(X) dX;
N=8, 16, 32, 64
4. INTEGRAL (-1 TØ +1) ØF (1-X**2)**A*F(X) dX;
N=8, 16; A=-.5, +.5, 1., 1.5
5. INTEGRAL (-1 TØ +1) ØF (1+X)**A*F(X) dX; N=8,
16; A=1, 2, 3, 4
6. INTEGRAL (-1 TØ +1) ØF ABS(X)**A*F(X) dX; N=8,
16; A=1, 2, 3, 4
7. INTEGRAL (0 TØ 1) ØF LN(1/X) *F(X) dX; N=8, 16
8. INTEGRAL (- ∞ TØ + ∞) ØF ABS(X)**A*EXP(-X**2) *F(X) dX;
N=8, 16; A=1, 2, 3
9. INTEGRAL (- ∞ TØ + ∞) ØF ABS(X)
**A*EXP(-ABS(X)) *F(X) dX; N=8, 16;
A=1, 2, 3
10. INTEGRAL (-1 TØ +1) ØF (X**A) *F(X) dX;
N=8; A=1, 2, 3, 4, 5

If there are any objections to this proposal please contact Beth Richardson at 333-6783.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additons to the Department of Computer Science Library (260 DCL) are listed below.

Dictionary of Computer and Control Systems
Abbreviations, Signs and Symbols, Simon and Schuster

The Programmer's COBOL, M. Berk

Introduction to Applied Numerical Analysis,
R. W. Hamming

Latent Roots and Latent Vectors, S. J. Hammarling

Artificial Intelligence, J. R. Slagle

Introduction to Partial Differential Equations:
from Fourier Series to Boundary Value Problems,
A. Broman

Timesharing System Design Concepts, R. W. Watson

Compiling Techniques, F. R. A. Hopgood

Advanced Computer Graphics, R. D. Parslow and
R. E. Green

Matrices and Computers in Electronic Circuit
Analysis, R. L. Ramey and E. J. White

Software Engineering, J. T. Tou

Spatial Patterns and Statistical Distributions,
G. P. Patil, E. C. Pielou and W. E. Waters

Introduction to Programming and Computer Science,
A. Ralston

ASIS/Proceedings of the American Society for
Information Science, The Information Conscious
Society

DID YOU KNOW

CalComp users should checkpoint their plot output. Any job whose lack of checkpointing produces operator handling problems (e.g., backing up over several complete graphs upon warm start) will be deleted by the operators. If you need help in checkpointing your output, see the Consultants, 166 DCL.

360 SCHEDULE OF OPERATIONS

Effective date: June 29, 1971

In the absence of serious hardware or software difficulties which require a deviation, the System/360 will observe the following schedule of operations:

| | Mon. | Tues | Wed. | Thurs | Fri. | Sat. | Sun. | |
|------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|--------------------------|----------------------|------------|
| Midnight | | | | | | | | Midnight |
| | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL * | HASP PLOTS APL | HASP PLOTS APL | |
| 6:30 a.m. | | | | | | | | 6:30 a.m. |
| 7:00 a.m. | Syst. Prog. | | Syst. Prog. | | Syst. Prog. | | | 7:00 a.m. |
| 8:00 a.m. | | Sched. Engr. | | Sched. Engr. | * | | | 8:00 a.m. |
| 9:00 a.m. | | | | | | HASP PLOTS | | 9:00 a.m. |
| 10:00 a.m. | HASP PLOTS ATS APL | HASP PLOTS ATS APL | HASP PLOTS ATS APL | HASP PLOTS ATS APL | HASP PLOTS ATS APL* | | | 10:00 a.m. |
| 11:00 a.m. | EXPRESS HASP PLOTS ATS | EXPRESS HASP PLOTS ATS | EXPRESS HASP PLOTS ATS | EXPRESS HASP PLOTS ATS | EXPRESS HASP PLOTS ATS | EXPRESS HASP PLOTS | Syst. Prog. | 11:00 a.m. |
| | | | | | | | | |
| 4:00 p.m. | | | | | | | | 4:00 p.m. |
| 5:00 p.m. | EXPRESS HASP PLOTS | EXPRESS HASP PLOTS | EXPRESS HASP PLOTS | EXPRESS HASP PLOTS | EXPRESS HASP PLOTS | HASP PLOTS | HASP PLOTS | 5:00 p.m. |
| | | | | | | | | |
| 9:00 p.m. | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | HASP PLOTS APL | 9:00 p.m. |
| Midnight | | | | | | | | Midnight |

* On the first Friday of each month, Friday morning is changed to:

12:00 - 6:00 a.m. HASP, PLOTS, APL

6:00 - 10:00 a.m. Sched. Engr.

10:00 - 11:00 a.m. HASP, PLOTS, ATS, APL

Hours shown for APL are experimental, and will be re-evaluated in August, 1971.

ILLINET OUTPUT NEEDS YOUR NAME!

We are currently revising our mailing list to eliminate duplications, change bad addresses, etc. If you wish to continue receiving the ILLINET OUTPUT, please complete and return this page.

NOTICE! Only readers who return this form will continue receiving the ILLINET OUTPUT. So don't delay, return this page immediately.

NAME:

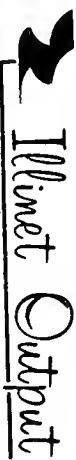
ADDRESS:

CITY:

DEPARTMENT:

...FOLD HERE AND STAPLE...

Editor, ILLINET OUTPUT
173a DCL
University of Illinois
Urbana, Illinois 61801



Gift and Exchange
220A Library
5 Copies

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Ill



Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 3, No. 7

September, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

| <u>CONTENTS</u> | <u>PAGE</u> |
|-----------------------------------|-------------|
| THE INDIVIDUAL ACCOUNTING PROGRAM | 2 |
| ELIMINATION OF PS NUMBER 1000 | 3 |
| SPITBOL | 3 |
| VERSION 3 of SNOBOL 4 | 4 |
| NEW CALCOMP FEATURES | 4 |
| HOLD IT, BUT NOT TOO LONG | 7 |
| COLOR OF YOUR TAPE REEL | 7 |
| PUZZLING | 8 |
| SAVE A TREE! | 11 |
| ANS COBOL | 12 |
| IS MY JOB COMPLETED YET? | 12 |
| NEW ATS VERSION | 14 |
| NEW VERSION OF MPS | 14 |
| SELECTED LIBRARY ACQUISITIONS | 15 |
| PUZZLING ANSWERS | 16 |
| CSO SHORT COURSES! | 16 |
| THE 360 RUNS | 21 |
| IF YOU COMPLAIN, WE'LL ANSWER | 22 |
| ILLINET OUTPUT NEEDS YOUR NAME | 23 |

THE LIBRARY OF THE

OCT 21 1971

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

NOTICE!

We are currently revising our mailing lists. If you wish to continue receiving the ILLINET OUTPUT, please complete and return the last page if you have not already done so. This is the last month we will be using our old mailing lists, so don't delay.

THE INDIVIDUAL ACCOUNTING PROGRAM

The administration has decided to assign fixed allocations of funds to departments to cover instructional computer costs, and to charge class (i.e., instructional) use of the 360/75 to the individual departments.

On October 3, 1971, the accounting system of the 360/75 will be modified to include the Individual Accounting Program. The new 360 accounting system will then provide the means for the prime user of a Problem Specification number (PS number) to control and monitor the use of the computer by the individual users of the PS number. The Individual Accounting Program will be of greatest advantage to instructors of classes which use the computer, but research users may also use this program, if they wish to control the budgeting of their funds to individual users.

The basic concept of the Individual Accounting Program is that the money in a PS number is suballocated to the individual users of that PS number. Each user is identified by a unique user number, and is provided his own code word for security.

Each instructor or prime user is allocated a fixed amount of money in his Problem Specification (PS) number. This amount may be altered during the life of the PS number by submission of a PS change form.

A prime user may specify on a new or change PS form that he wishes to suballocate the funds in his PS number. This is done simply by checking the

appropriate box on the form. Suballocation will result in each user of the PS number having a unique code word, a user number, and a fixed amount of money allocated to him. Once a PS number is suballocated, every job run under that PS number must specify a user number.

The suballocation machinery is regarded by CSO as a tool offered to the prime user to help him budget his funds. For further information on the Individual Accounting Program, contact the Consulting Office, 166 DCL. Handouts are available there which fully explain how to use this new accounting feature.

ELIMINATION OF PS NUMBER 1000

Problem Specification (PS) number 1000 was originally set up as a means of providing short one-time runs on the computer for those faculty members who wished to acquaint themselves with the computer. It was understood that students could utilize PS 1000 under the guidance of a faculty member. It has become increasingly evident during the past six months that PS 1000 is being misused. As one of the first steps in eliminating those loopholes in our system that encourage the misuse of the computer, we have eliminated PS 1000.

Those persons who have occasionally used PS 1000 in good faith and who feel that its elimination might cause a hardship on them can see Merlin J. Foster, 175 DCL, for a discussion of the possibility of other arrangements.

SPITBOL

Version 2.0 of SPITBOL is now available on the system and is the standard system default. Anyone requiring information or help in using SPITBOL may contact the Consultants, 166 DCL.

VERSION 3 of SNOBOL4

Version 3 of the SNOBOL4 interpreter is now the standard system default. Any problems should be brought to the attention of the Consultants, 166 DCL. The second edition of the book SNOBOL4 by R. E. Griswold applies to version 3. An update for the first edition is available in the Consulting Office.

NEW CALCOMP FEATURES

A totally new CalComp manual will be available to users in the near future. Additional features now available to CalComp users are as follows:

- (1) Any job wanting more than one copy should have COPIES=n in the parameter field of the EXEC CALCØ'IP card, where n is the desired number of copies. The estimated length and plotting time must be large enough to cover all copies. If it isn't, the number of copies will be reduced to fit within the estimated length and time.

- (2) A job requiring wide paper, special ink, or special pen must indicate such in the parameter field of the EXEC CALCØ'IP card by saying:

SPECIAL=YES for special pen or ink
PA=PW for wide paper

A special request form is still necessary, but HØLD=YES should not be specified on the ID card.

- (3) Any job plotting more than 120 inches or more than 30 minutes (or any job estimating more than these limits which ABFENDS without exiting through the monitor) will be put in HØLD after execution and released at the operator's discretion.

- (4) No job will be allowed to estimate over 1200 inches or 2 hours. These jobs will ABEND with SOC1.
- (5) Users may now communicate with the operators by a CALL CCP1MZ (mes,len)

where mes is a character string of no more than 70 characters and len is the length of the message.

This call (which may be made at any point in a program) causes the plotter to pause and the message to be printed on the console. The operator will attempt to fill the request and continue the plot. Note that if the message requests a change of ink, there must be a SPECIAL=YFS on the parameter field of the EXEC CALCØIP card - see (2).

- (6) A change has been made to the error message produced by an out-of-bounds pen move. The error message now includes the location of the pen before the out-of-bounds move. The printed coordinates are with respect to the last origin reset; the same coordinates would be returned by a call to WHERE immediately preceding the out-of-bounds pen move.
- (7) Sixteen bytes have been added to the communication region in CCP1 (COMMON DSECT). Plot packages link-edited with the old CCP1 must be relink-edited with the updated code to avoid SOC4 abends. Details are available in the Consulting Office.
- (8) The subroutine SCALE has been changed to accept negative values for the parameter K. The effect of a negative K will be as follows: |K| is used for the repeat factor, a negative step size is produced, and the maximum of the data instead of the minimum

is returned. Then, when the scaling parameters are used to plot a graph, the graph will be inverted, with its minimum value at the top and its maximum value at the bottom.

- (9) The routine CCP6LI has been added to the UOI Subroutine Library. Its features include the following:
 - (a) the option of specifying as few as three or as many as eight parameters to control the plotting of a graph;
 - (b) the option of plotting a dashed-line graph (with dashes of given length);
 - (c) all features currently in CCP6LN and LINE, with a saving in core and speed.

Changes to CCP6LN and LINE have also been made. All programs currently using either routine will need no change; however, further use of CCP6LN is discouraged.

New writeups containing further details are available in the 360/20 room.

- (10) Calls to CCP2SY (or CCP2SB or SYMBOL) and CCP3NP (or NUMBER) with X and Y values of negative 0.0 will plot a symbol at the origin. To plot a symbol at the position where the last symbol ended, X and Y must equal 999.0 (or, as before, SIZE must be less than zero). This continuation feature may also be applied to X and Y independently. Initial calls to either routine with X and/or Y value(s) of 999.0 will default the value(s) to 0. The capability of plotting a symbol at the present pen position has been added to both routines. To activate it X and Y must equal 1000.0.

- (11) In efforts to ensure continuity of CalComp software support and to gather information about CalComp usage, information is sought on user-owned plot packages currently in use. Anyone in charge of maintaining routines which generate plotter output is requested to contact Bob Goldberg, 333-6783, Room 167 DCL. This information will be helpful when making future changes to the CalComp software.

HOLD IT, BUT NOT TOO LONG

In order to allow users to specify the order in which jobs are run when this order is critical, HASP allows the user to specify on his ID card that a job is to be placed in HOLD when it enters the system. Such a job will not be processed until it is released, either by explicit action of the operator (not normally done) or by the user by specifying RELEASE=jobname on the ID card of another job.

Recently this facility has been abused in that some users have put jobs into HOLD and left them there for several days or even weeks at a time. This practice causes an unnecessary nuisance to the operating staff, and ties up HASP facilities which could be put to better use.

Therefore, beginning immediately, any job which has been in HOLD for longer than 48 hours is subject to cancellation by the operator at his discretion.

THE COLOR OF YOUR TAPE REEL

Effective immediately tapes may be submitted for labeling on any color of reel except red or yellow.

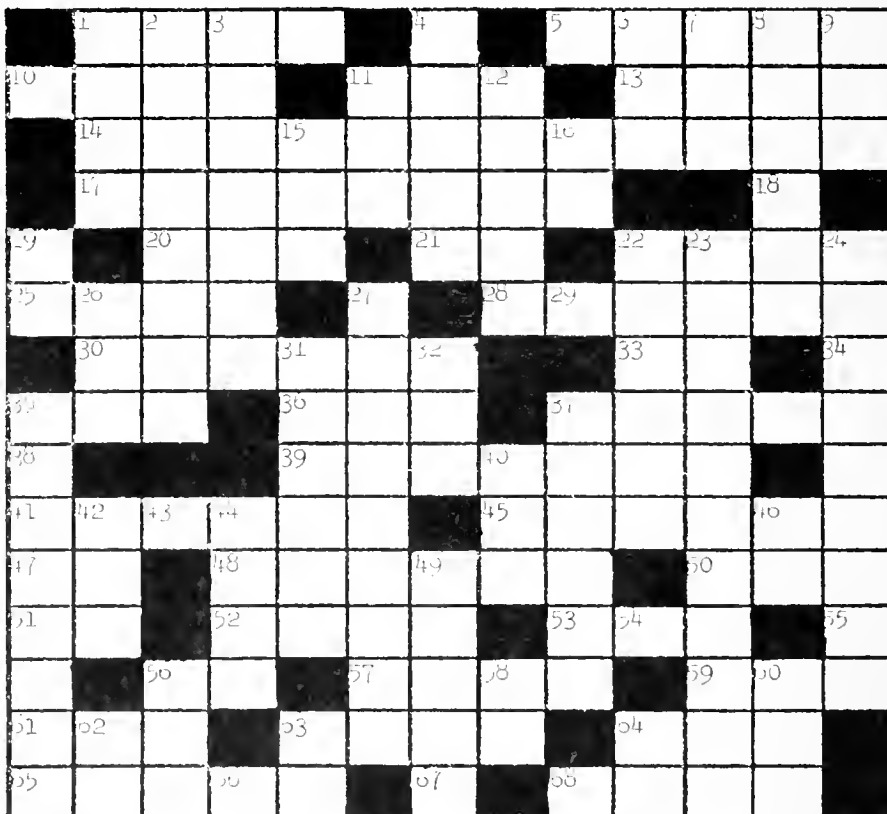
Forms must be obtained from room 162 and properly filled out for the labeling. All tapes routinely used on the System/360 must be externally labelled by CSO.

Tapes may be purchased from CSO in quantities of five (5) or fewer. Greater volume must be ordered through the University of Illinois Purchasing Department. They may be procured at the same price as charged by CSO.

Tapes which are to be used only once or twice on the System/360 need not be labeled. However, special permission for mounting must be sought from the operator in charge of the shift.

PUZZLING

See page 16 for answers.



ACROSS

1. storage medium
4. add
5. pilgrim to Mecca
10. what programmers do in response to a 0F3abend
11. programming temporary fix
13. Othello
14. area to which R13 points (2 words)
17. flushed jobs get a higher _____
18. $\sqrt{-1}$
19. or?
20. tennis shot
21. customer engineer
22. indexed sequential access method
25. important step in compilation
27. branch
28. module (anagram)
30. creating a new release of OS/360
33. lead
34. and
35. tape operating system
36. programmer response to down time (2 words)
37. iliac prefix
38. 2.718281828459045...
39. delete a data set
41. instruction attribute
45. instant _____ flakes look like card chad
47. engineering change
48. subset of PDS
50. not
51. tuberculosis
52. give me a fix
53. turnaround time
55. immediate
56. define constant
57. famous research and development corp.
59. ASCII control character
61. 3.14159265358979323846.. (var. sp.)
63. printer command
64. English cathedral town

- 65. joint
- 67. and
- 68. system for simulating

DOWN

- 1. goldfish
- 2. one module of FORTRAN II _____ another
- 3. areas of core
- 4. upper story
- 5. American Mathematical Society
- 7. state of release 20 upon receipt
- 8. Jules' Own Version of the International Algebraic Language
- 9. Institute of Radio Engineers
- 11. program status report
- 12. wine^d and dine^d
- 15. data management control block
- 16. synonym for railroad (abbr.)
- 19. obscure system
- 22. two types of printers are an electrostatic and _____
- 23. parts of multiplexor
- 24. decreasing efficiency of OS/360
- 26. operates largest computer on U. of I. campus
- 27. system test
- 29. $\lim_{n \rightarrow \infty} \frac{1}{1+n}$
- 31. execution phase (2 words)
- 32. 19 across
- 35. tty
- 37. cached
- 40. applied programming expert
- 42. waitee
- 43. and
- 44. General Motors Acceptance Corp.
- 46. card _____ tape
- 49. meat computer
- 54. or?
- 56. data management control block

- 58. noun phrase
- 60. 1. prefix
- 62. _____ counter: bits 32-33 of PSW
- 63. southwest
- 64. entry point
- 66. or?

DID YOU KNOW?

The keypunch facility at FAR has been closed because of the extremely low usage. The keypunches have been moved to 70 Commerce West where the usage is higher, and where a remote terminal is located.

SAVE A TREE!

With the beginning of the new academic year, we wish to remind our users of the proper way to dispose of unwanted cards and listings. To this end, we have reprinted a letter to the editor that appeared in the local papers last semester.

"The thirteen computer centers of the university use roughly 12 tons of computer paper and 13 tons of punch cards each month. Until now, these paper products have been treated as ordinary garbage and incinerated or sent to a landfill. This is a pointless waste of two natural resources, trees and land available for more prosaic utilization.

"In conjunction with the Champaign County Rehabilitation Center (CCRC) we can recycle these paper products to the mills. CCRC, by agreeing to collect and sort our computer output waste, can provide additional work for their people, reduce their requirements from our community funds, and prepare the paper for recycling.

"These goals can only be realized with everyone's help and cooperation. There are separate, marked containers for cards and paper at each computer center.

Instead of discarding bad runs at home or office, bring them back to the computer center on your next trip.

"Due to the fantastic amount of waste generated at DCL, we especially urge the people using the key punch facilities to cooperate and use the marked containers. Remember, we of the university can be directly responsible for saving at least 300 trees a month! Please help."

ANS COBOL

Two catalogued procedures have been added to the System/360-75 to enable users to test American National Standard COBOL programs. They are ANS (compile only) and ANSLKGØ (compile, linkedit and run). Details are available in the Consulting Office.

Users are reminded that when Release 20 of the Operating System is installed, ANS COBOL will replace COBOL F as the system default, and that IBM will drop support of the COBOL F compiler completely in 1972. Information on language conversion may be obtained from the appropriate manuals and in the Consulting Office.

A limited supply of the ANS COBOL Programmer's Guide (C28-6399), and COBOL Conversion (C28-6395) manuals are now on hand. Users with research PS numbers may obtain copies of these manuals, upon request, from the Consulting Office.

IS MY JOB COMPLETED YET?

Since the telephone answering service was removed on July 1, 1971, the operating staff has noted a large increase in the number of telephone calls to the routing room inquiring about the status of individual jobs. Especially during rush periods, such calls detract from the ability of the staff to serve users at the windows of the routing room. Therefore, CSO cannot honor telephone requests on job status.

Users are reminded that there are two other sources of information regarding the status of a job submitted for processing. The first is the listing of the status of jobs posted on the 48-Hour Board in the DCL lobby. Similar listings can be created at each remote terminal, covering the jobs submitted from that terminal. The second means is by use of the Touch-Tone Inquiry System. Please note that a Touch-Tone phone costs only one dollar per month more than an ordinary phone.

For those users who wish to avail themselves of the Touch-Tone Inquiry System, it is necessary that a letter be submitted to Mr. M. J. Foster, 175 DCL, requesting that a Touch-Tone phone be installed. This letter should be signed by a person in the requesting department who is recognized by the Office of Computing Services as an authorized signatory for that department. The letter should contain the following information:

1. New phone to be installed or existing phone to be changed. (Single line phones only.)
2. Physical location of phone.
3. Valid PS number.
4. Authorized departmental signature.

Upon receipt of this letter, the PS number will be validated as being active. This fact will be noted on the letter. Copies of the validated letter will be sent to the University Telephone Accounting Division, and to the authorized signatory requesting the Touch-Tone phone. Once the person requesting the Touch-Tone phone has been notified by the Telephone Accounting Division that his request has been approved, regular procedures should be taken to have the phone installed.

Currently, whenever the PDP-7 is down the Touch-Tone Inquiry System will not answer. We are having an

automatic switch-over mechanism installed, however, which will transfer your call to the Routing Room so that the personnel there can tell you of your job's status.

NEW ATS VERSION

A new version of ATS has been put on the system. Most of the changes are internal and not noticeable to the user. The only obvious change is that when doing an ATTN BACKSPACE correction, the typewriter will advance one line so that corrections are readable.

This version of ATS is more stable and allows the striking of the ATTN key while the typewriter is printing. If you have any problems, please call Sandy Moy, 333-6264.

NEW VERSION OF MPS

Version 2.9 of MPS is now available in a test version. To use it, include two STEPLIB cards in your input deck:

```

Add  —————>  //      EXEC      MPS
                  //MPS.STEPLIB DD  DSN=SYS9.MPSLIB.DISP=SHR
                  //MPS.SYSIN   DD  *

                  /*
Add  —————>  //GØ.STEPLIB   DD  DSN=SYS9.MPSLIB,DISP=SHR
                  //GØ.SYSIN   DD  *

                  /*

```

If no problems are encountered with this version, it will become the standard version. One week's notice will be given before the change is made.

DID YOU KNOW?

According to the University of Waterloo Computing Center newsletter, the WATFIV system has been distributed to 122 different computing centers.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Assemblers and BAL, I. Flores

Theory of Optimal Control and Mathematical Programming,
M. D. Canon, C. D. Cullum, Jr., and E. Polak

Network Analysis For Planning and Scheduling,
A. Battersby

Semantic Information Processing, M. Minsky

The Public Library and the City, Conant

Problem Solving: (Research, Method and Theory),
B. Kleinmuntz

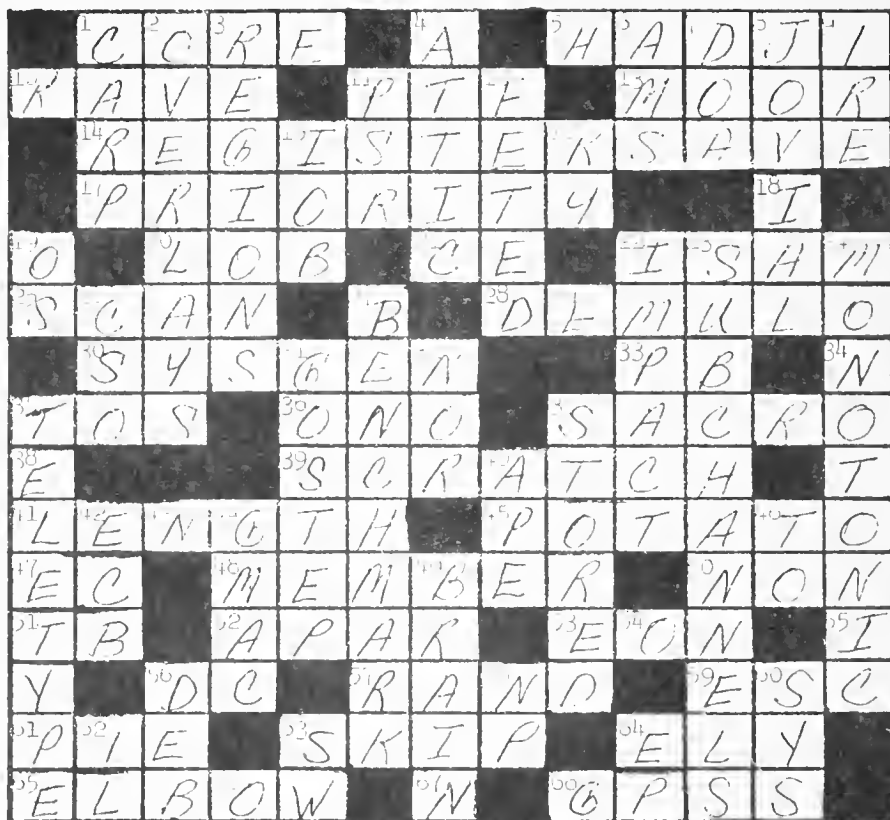
Systematic Analysis of University Libraries: (An
Application of Cost-Benefit Analysis), J. A. Raffel,
and Shishko

A Systems Approach, P. M. Morse

Essays on Cellular Automata, A. W. Burks

Advanced Technology-Systems Concepts, M. L. Puhin

Annual Review of Information Science and Technology,
C. A. Cuadra

PUZZLING ANSWERSCSO SHORT COURSES!

During the Fall Semester, 1971, the Computing Services Office will offer no-fee, non-credit short courses in programming and the use of the IBM System/360. These courses are open to all faculty, staff, and graduate students. Those planning to attend should complete the application form on page 19 of this newsletter. Enrollment is limited to 25 persons per

course, and a course may be cancelled if it draws little or no response. Additional application forms may be obtained from the DCL Information Desk, 333-6465. Any questions should be directed to Rebecca Wetzel, 169 DCL, 333-6783 or 333-6133.

Schedule of Courses

(Note: Courses will not meet the week of November 21 through November 27.)

Elementary FORTRAN IV: This covers the beginning fundamentals of the language, including: real and integer constants and variables, arithmetic statements, IF and GO TO statements, simple input/output statements, DO loops, and one-dimensional arrays. There are no prerequisites.

Section A. M W F, 1 pm - 3 pm, Oct. 18 through Oct. 29, 237 DCL. Instructor: Nick Smith.

Section B. T Th, 7 pm - 9 pm, Nov. 9 through Dec. 2, 237 DCL. Instructor: Rebecca Wetzel.

Intermediate FORTRAN IV: This covers multi-dimensional arrays, subprograms, statement functions, formatted input/output, double precision, complex, and logical constants and variables, and COMMON, EQUIVALENCE, DATA, and type statements.

M W F, 1 pm - 3 pm, Nov. 1 through Nov. 12, 237 DCL.
Instructor: Beth Richardson

Advanced FORTRAN IV: This presents advanced language and use features, including: FORTRAN creation and use of tape and disk data sets, multiple entries and returns in subprograms, debugging and efficiency hints, FORTRAN II optimization, and the creation and use of object decks and load modules. The prerequisites are FORTRAN knowledge equivalent to Intermediate FORTRAN IV and considerable FORTRAN programming experience.

T Th, 1 pm - 3 pm, Nov. 16, 239 DCL, Nov. 18 through Dec. 9, 237 DCL. Instructor: Stephen Leighton.

Job Control Language (JCL): This provides an introduction to the basic features of Operating System/360 Job Control Language. Emphasis will be on the concepts necessary for a good understanding of JCL's purpose and capabilities. The prerequisite is experience in using any 360 programming language.

T Th, 10 am - 12 noon, Oct. 19 through Nov. 4, 239 DCL. Instructor: Gerald P. Beck, Jr.

Introduction to Assembly Language: This covers the beginning fundamentals of the language, including: bits, bytes, and memory organization, data format and number representation, hexadecimal numbers, registers, BEGIN and LEAVE macros, and a subset of standard instructions (Add, Branch, Subtract, Load, Move, and Store).

T Th, 7 pm - 9 pm, Oct. 19 through Oct. 21, 237 DCL. Instructor: Gordon Chace.

Assembly Language Programming: This covers the Standard Instruction Set, program segment control, QSAM and other system macro facilities, and OS conventions for linkage control.

T Th, 7 pm - 9 pm, Oct. 26 through Nov. 4, 237 DCL. Instructor: Gordon Chace.

Introductory SNOBOL Programming: SNOBOL4 is a sophisticated, easy-to-learn, general purpose programming language, outstanding where characters, rather than formulas, must be manipulated. This course requires no previous computer knowledge.

T F, 3 pm - 5 pm, Nov. 9 through Dec. 10, 115 DCL. Instructor: Robert Foster.

September, 1971

10

CSO SHORT COURSES - FALL, 1971

Name _____ Date _____

Dept. _____

Campus Address _____

I plan to attend

Elementary FORTRAN IV

_____ Section A

_____ Section B

_____ Intermediate FORTRAN IV

_____ Advanced FORTRAN IV

_____ Job Control Language (JCL)

_____ Introduction to Assembly Language

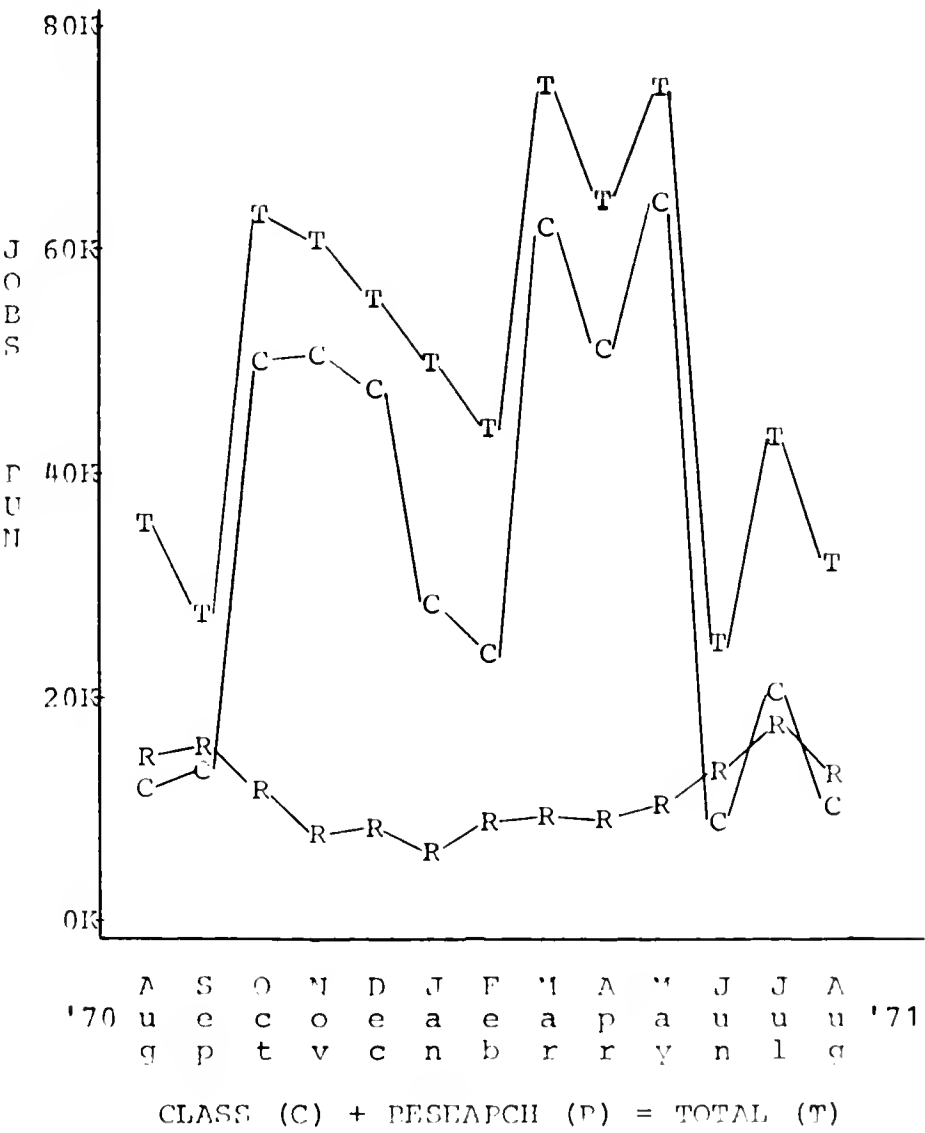
_____ Assembly Language Programming

_____ Introductory SNOBOL Programming

...FOLD HERE AND STAPLE...

Rebecca Wetzel
16⁹ DCL
Carpus

THE 360 PUNS



IF YOU COMPLAIN, WE'LL ANSWER

The Computer Center invites your comments, complaints, and suggestions regarding the facilities and services offered. We will reply directly to all comments if a return address is provided. Just complete and return this page to Mr. Merlin Foster, 175 DCL. If you have an urgent problem and all the normal channels have failed, give Merl a call at 333-6618. He'll try to set things straight for you.

Comments:

September, 1971

23

ILLINET OUTPUT NEEDS YOUR NAME!

We are still revising our mailing list to eliminate duplications, change bad addresses, etc. If you wish to continue receiving the ILLINET OUTPUT, please complete and return this page, if you did not do so last month.

NOTICE! Only readers who return this form will continue receiving the ILLINET OUTPUT. So don't delay, return this page immediately. Next month's issue will use our new mailing list!

NAME:

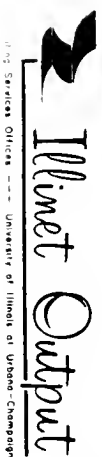
ADDRESS:

CITY:

DEPARTMENT:

...FOLD HERE AND STAPLE...

Editor, ILLINET OUTPUT
173a DCL
University of Illinois
Urbana, Illinois 61801



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Vol. 3, No. 8

October, 1971

CONTENTS

PAGE

| | |
|------------------------------------|----|
| IMPLEMENTATION OF HASP VERSION 3.0 | 2 |
| UØI SUBROUTINE LIBRARY ADDITIONS | 4 |
| CALCOMP WITH THE IBM LOADER | 5 |
| FOR INFORMATION... | 6 |
| FORTRAN "G" DEBUGGING AIDS | 7 |
| PUBLIC LIBRARY | 8 |
| SIMPLIFIED STANDARD DCB MACROS | 9 |
| PDSPRINT | 10 |
| CORRECTION! | 11 |
| CALCOMP IMPROVEMENTS | 11 |
| SELECTED LIBRARY ACQUISITIONS | 14 |
| FEEL LEFT OUT? | 15 |

IMPLEMENTATION OF HASP VERSION 3.0

CSC has recently installed HASP Version 3.0. Most changes to HASP (which, incidentally, stands for Houston Automatic Spooling Priority) are invisible to users, but enable the operators to process your jobs more efficiently.

Three new ABEND codes have been added through HASP to enable users to discover more quickly which /*ID card parameter was exceeded, in the event one was. They are:

A22 ESTIMATED LINES EXCEEDED
B22 ESTIMATED CARDS EXCEEDED
E22 ESTIMATED I/O REQUESTS EXCEEDED

Since these are ABENDS and not "JOB CANCELLED BY OPERATOR'S" it is possible (thru the use of the STAE macro in ASM, the ON ERROR function in PL/I or the COND=EVEN parameter in JCL) to temporarily regain control in order to do some job clean-up. After one of these three ABENDS, a job is allowed an additional 1000 lines, 10 cards, or 100 I/O requests, respectively. If these additional limits are exceeded or if the original estimates are exceeded in step termination, the job will be cancelled with the following error message in the HASP log:

CARDS ESTIMATE EXCEEDED IN STEP TERMINATION
LINE ESTIMATE EXCEEDED IN STEP TERMINATION
IOREQ ESTIMATE EXCEEDED IN STEP TERMINATION

A new parameter, REGION, has been added to the /*ID card. Use of the REGION parameter will enable more efficient scheduling of jobs in the future, but for the present, it imposes another consideration upon the user. The REGION specified on the /*ID card will be used in calculating the cost of a job prior to execution. Previously, 116K was used in all such preliminary calculations, since the requests on the various EXEC cards were not known to

the estimator. In cases where the REGION on the /*ID card is greater than 116K, therefore, the estimated cost will be greater than under the old system, and a job which ran under the old system may not be allowed to begin execution.

The REGION parameter on the /*ID card sets the maximum number of kilobytes of core which will be used in any step of that job. Thus, REGION=58K means that no step in the job will use more than 58K. The REGION parameters on EXEC cards for the steps may lower the amount of core used for that step below the /*ID card REGION, but they may not increase it. In the following case, therefore:

```
/*ID [Other parameters],REGION=100K
//A EXEC PRØC1,REGION=58K
//B EXEC PRØC2,REGION=100K
//C EXEC PRØC3,REGION=200K
```

The REGION s that will be allotted to steps A, B, and C are 58K, 100K and 100K, respectively.

Heirarchy support is also provided for the REGION parameter, as in other JCL. To get 200K of fast core and 100K of LCS (slow core), you would code:

```
/*ID [Other parameters],REGION=(200K,100K)
```

Shown below is a list of system and user catalogued procedures currently in the procedure libraries which require the REGION parameter on the /*ID card for correct operation.

| <u>PROCEDURE</u> | <u>REGION</u> | <u>PROCEDURE</u> | <u>REGION</u> |
|------------------|---------------|------------------|---------------|
| ASMXASM | 144K | PØLØ | 200K |
| BASIC | 180K | PRØGLØØK | 150K |
| BEDRES | 348K | SIM2 | 150K |
| BIØMED | 180K | SNØBØL | 232K |
| CØMLST | 150K | SØUP | (180K,40K) |
| ECAP | 250K | SØUPAC | (180K,80K) |

| | | | |
|----------|------|-----------|------------|
| FMS | 200K | SØUPSØRT | (160K,60K) |
| GENIRAS | 150K | SØUPTTEST | (180K,40K) |
| LINKEDIT | 128K | TG | 200K |
| MDSCALE | 200K | TGBUILD | 200K |
| PCAP | 160K | UMAVAC | 400K |

If the REGION parameter is omitted from the /*ID card, the default is 116K.

Convenient methods of FILEing HASP and Express output to PLOTS are planned as later additions to HASP 3.0. They will be announced as they become available.

DID YOU KNOW?

The Chicago Circle campus has installed a new IBM 370/155.

UØI SUBROUTINE LIBRARY ADDITIONS

The following new routines have been added to the UØI Subroutine Library. Documentation concerning their use is available at the 360/20 facility.

MDETZ - computes the determinant of a real, general matrix.

MINVZ - computes the inverse of a real, general matrix by Gaussian elimination. Row interchanges are always used (partial pivoting). In case of numerical difficulties MINVZ switches to both row and column interchanges (complete pivoting).

NØLINZ- solves simultaneous non-linear equations. Solution is by the Newton-Raphson method generalized for N dimensions. NØLINZ should be used when expressions for the first

derivatives are known. `BROWNZ` (in the UOI Subroutine Library) should be used when equations for the first derivatives are not known.

`SØRTZ` - sorting routine for use when the input data set (on tape, drum or disk) is too large to be brought into main storage and sorted all at once. Input to and output from `SØRTZ` can be any sequential data set which consists of fixed length or variable length blocked or unblocked records. This routine is a FORTRAN interface for the IBM Sort/Merge package.

CALCOMP WITH THE IBM LOADER

A version of CalComp using the IBM loader is now available. It may be accessed by any of the following.

To compile, load, and execute a CalComp program written in FORTRAN, assembly language, or PL/I:

```
    // EXEC FØRTLDPØT  (for FORTRAN)
or  // EXEC ASMLDPØT  (for assembly language)
or  // EXEC PL1LDPØT   (for PL/I)
```

To load and execute a CalComp program written in FORTRAN, assembly language, or PL/I:

```
    // EXEC LDPTFØØT  (for FORTRAN)
or  // EXEC LDPTASM   (for assembly language)
or  // EXEC LDPTPL1   (for PL/I)
```

The step name of the load-execute step is `PLØØT`. Therefore, all references to a `GØ` step will cause JCL errors; data should be specified by a `//PLØØT.SYSIN DD` card, and parameters should be passed by specifying `PARM.PLØØT=' parameters '`.

All CalComp parameters remain unchanged except for the EP parameter, which is ignored. Parameters to the IBM loader are specified by a slash in the parm field, followed by the loader parameters. For example, to specify a paper length of 20 inches and suppress printing of the loader map with a FORTRAN program, use the following:

```
// EXEC FØRTLDP,PARM.PLØT='PL=20/NØMAP'  
//FØRT.SYSIN LD *
```

<FØRTRAN program>

```
//PLØT.SYSIN DD *  
  <data cards>
```

FOR INFORMATION...

We have listed below some of the people you can call when you have a problem or a question about CSO.

| | | |
|------------------|------------|-----|
| Information Desk | Main Lobby | DCL |
|------------------|------------|-----|

Staff, 333-6465. All questions of a general nature concerning procedures, forms, tours, short courses, etc.

| | | |
|-------------------|----------|-----|
| Accounting Office | Room 171 | DCL |
|-------------------|----------|-----|

Lorraine Kupczyk, 333-6760. All questions about computer accounting, problem specification usage, current rates, etc.

| | | |
|-------------------|----------|-----|
| Consulting Office | Room 166 | DCL |
|-------------------|----------|-----|

Staff, 333-6133. All questions concerning programming, available systems and facilities, user documentation, etc.

FORTRAN "G" DEBUGGING AIDS

Modified service routines Library to provide improved handling for program errors are now available for optional use. The format of the traceback has been made more readable, with hexadecimal manipulations performed automatically. The new traceback is also capable of providing diagnostics in certain situations where the IBM supplied traceback fails. For instance, the underflow which occurs in evaluating EXP(-200) can be located only with the new traceback.

The modified error handler includes 7 new error messages, coded UIERRO0C1 through UIERRO0C7, providing diagnostics with completion codes SYSTEM 0C1 through 0C7. Program terminations always follow these messages and their tracebacks. With the standard FORTRAN G error monitor, a core dump is needed to obtain any diagnostics.

A subroutine can be called which will prepare a user-selected list of variables ("dumplist") to be printed in labeled, numeric format in event of an error. The dumplist printout is similar to a NAMELIST and is regarded as part of the traceback. To specify a dumplist, use the subprogram DUMPLZ as follows:

```
NAMELIST /NAME/ A,B,C, etc.  
CALL DUMPLZ('/NAME/')
```

The selection of the name for the NAMELIST is arbitrary. This can be used only with FORTRAN G, not with FORTRAN H. However, all other features of the modified error handler are G-H compatible.

The modified error handler is in the dataset SYS9.TRACE and is accessible by any FORTRAN G or H job run in HASP. It can be invoked using LIBFILE with catalogued procedures, as shown here:

```
/*ID      <ID card information>
// EXEC   FØRTLDDGØ,LIBFILE='SYS9.TRACE'
//FØRT.SYSIN .DD  *
           <program>
/*

//GØ.SYSIN  DD  *
           <data>
/*
```

Questions, problems, and suggestions should be addressed to the Consultants, 166 DCL.

PUBLIC LIBRARY

A new addition to our system is the Public Library, which contains user-contributed programs of general interest. Information about the use of the library is in the "Public Library" handout, just outside the Consulting Office, 166 DCL.

As of September 30, the Public Library contained 6 members:

CLEAN - A program to clean up FORTRAN source decks by sequencing statement numbers, etc.

FRECØR - A PL/I internal procedure which obtains the amount of free core available for use at any given time.

INDEX - A program which produces an alphabetized index such as that found in manuals or publications, from card input.

PØINT - A package of FORTRAN character manipulation routines; includes POINT, SUBSTR, LENGTH, INDEX, NØNBL, PAT, NEXT, TRIM, MATCH, BLANKS, CØPYS. (Written in assembler language.)

SMITH - Fortran subroutine which plots a smith chart on CalComp (used by electrical engineers).

TRACER - Machine-code tracing subroutine for use with FORTRAN, assembler, PL/I or COBOL main programs. (Will not work on Express.)

Contributions of programs to the Public Library are always welcome. See the Consultants, Room 166 DCL, for information.

For obvious reasons, CSO cannot be responsible for the correct operation of Public Library programs. However, they are tested at the time of addition. Library members will be removed if there proves to be little demand for them, or if they are found to be in error.

DID YOU KNOW?

The following appeared in the September 6, 1971, issue of the University of Michigan's (Ann Arbor) Computer Center NEWSLETTER:

"MICIS, the Michigan Interuniversity Committee on Information Systems, has recently published a survey of University facilities for computer-aided instruction entitled 'A Representative Sample of Facilities and Activities at The University of Michigan bearing on Instructional Uses of Computing.' Copies are available free of charge, as long as the supply lasts, to anyone requesting them. Requests should be addressed to Marlene Lipshutz, CRLT, 109 E. Madison."

SIMPLIFIED STANDARD DCB MACROS

The three macro instructions, SYSIN, SYSPRINT and SYSPUNCH, provide the assembler language programmer with a simplified way of specifying

standardized Data Control Blocks for card input, print output, and punch output, respectively.

Each of the three macro instructions generates a DCB exactly as shown in the "Assembler Language I/O" handout. Thus, they are merely conveniences for the programmer, who would frequently copy these DCB's from the handout anyway. In addition, the programmer can change any of the standard DCB options by specifying them on the simplified macro call. The DCB's generated are Express compatible.

The macros use standard DDNAMEs, i.e., SYSIN, SYSPRINT and SYSPUNCH. Unless overridden by putting a name in the name field of the macro call, the same names can be used in the program in a GET or PUT statement to refer to the DCB. For examples illustrating the use of these macros, see the Consultants, 166 DCL.

PDSPRINT

The UOI utility program PDSPRINT, which lists information about the members of a partitioned data set (PDS), has been changed to allow printing of specific members of a PDS. To use this feature, the following input is used:

```
// EXEC LISTPDS,PARM=MEMBER,DSNAME=dataset name
//SYSIN DD *
    <member cards>
/*
```

where each "member card" in SYSIN has a requested member name in columns 1-8 (left justified). There is no limit to the number of members and no restriction as to order. Invalid member names cause error messages, but the program continues.

CORRECTION!

Contrary to what a previous ILLINET OUTPUT said, WATFIV will accept multiple statement cards now. See the Consultants for further details. Also, the double precision function, DABS, no longer causes a WATFIV compiler error on EXPRESS.

CALCOMP IMPROVEMENTS

New versions of both CCP1 and the CalComp monitor are now available. The new monitor contains fixes to problems with the SPECIAL=YES parameter. Also, in the statistics printed at the end of a CalComp job, the new monitor includes the number of calls to CCP1PL and the number of pen moves. All jobs running under the old CalComp system will run using the new monitor.

CCP1 has been completely rewritten. Changes are as follows:

1. An origin reset by means of a negative IC does not reset the FACTØR and ØFFSET parameters.
2. PLØTA and ØRGNSE have been eliminated.
3. Various CCP1 routines have been split into separate control sections, saving space for those who do not use all the features of CCP1.
4. ZIP parameters are now checkpointed with a call to CCP1BA.
5. When an out of bounds move occurs, the coordinates of the absolute origin and window are printed, along with the current value of FACTØR.
6. The effects of IC=22, 23, -22, and -23 have been changed (see 7b below).
7. Several new entry points have been added. Parameters enclosed in brackets are optional.
 - a. CALL CCP1WI (XLØW,YLØW,XHIGH,YHIGH [,ICØDE]) where (XLØW,YLØW) and (XHIGH,YHIGH) are the lower left and upper right corners of

a rectangle. Only lines which lie inside this rectangle are plotted; if a line moves outside the "window", the pen stops on the border. ICØDE is optional and specifies the desired number of windowed moves; 2*31-1 is the default.

b. CALL CCP1RØ (A,B)

Similar to ØFFSET, this routine defines values for a rotation transformation. When CCP1PL (or PLØT) is called with IC=-22, -23, 22, or 23, the point actually plotted is (A*X-B*Y,A*Y-B*X).

c. CALL CCP1ST (C1 [,C2][,C3])

where each C is one of the literals 'FACTØR', 'WINDØW', or 'ØRIGIN'. The current values of the corresponding parameters are saved, and the parameters are given default values. To restore the saved values, CALL CCP1RS (C1[,C2][,C3]) where the C's are as above.

d. CALL CCP1ØR (IREFPT [,IC])

where IREFPT, an integer between 0 and 11 inclusive, is the number of a reference point, and IC is as in CCP1PL. This routine is similar to the old PLØTA and contains three options. If called without IC, the pseudo pen position is stored in reference point # IREFPT. If IC is given and is not zero, the pen is moved to reference point # IREFPT by a call to CCP1PL with IC as specified. If IC is given and is zero (an option not allowed in CCP1PL) reference point # IREFPT becomes the new (0,0) point and the pen is not moved.

e. CALL CCP1AP (X,Y)

returns the absolute pen position (i.e., the position of the pen with respect to the first (0,0) point) in X and Y.

f. CALL CCP1MP (XMAX)
returns in XMAX the maximum X distance reached by the pen pen with respect to the absolute origin.

g. CALL CCP1PØ (R,ANGLE,IC[,ICØDE])
is like CCP1PL, except the point is specified in polar coordinates. ANGLE is assumed to be in degrees unless ICØDE is present and is non zero, in which case ANGLE is assumed to be in radians.

In addition, two new routines have been added:

1. CALL CCP1TI (ISECS) returns in ISECS the amount of time used on the plotter since the beginning of the job.

2. CALL CCP1IN (ERRMØV,ERRTIM) where ERRMØV and ERRTIM are either subroutine names or ASSIGNED variables, allows the user to intercept a call to CCPERZ after a plotter error. After CCP1IN has been called, an out-of-bounds pen move or excessive plotter time pass control to the address contained in ERRMØV and ERRTIM, respectively; of course, no further plotting is allowed.

DID YOU KNOW?

PLORTS users who have difficulty finding a particular PLORTS message file should refer to ØPENMSG 0 which always contains an index of all the PLORTS message files.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Reliability Mathematics (Fundamentals, Practices, Procedures), B. L. Amstadter

Numerical Initial Value Problems in Ordinary Differential Equations, C. W. Gear

Managing the Introduction of Computer Systems, R. Tomlin

Organizing for Innovation, J. A. Morton

Designing with TTL Integrated Circuits, R. L. Morris and J. R. Miller

Numerical Control User's Handbook, W. H. P. Leslie

NYC Machinability Data Systems, Numerical Control Series

Generalized Inverse Matrices, T. L. Boullion and P. L. Odell

Optimization Methods for Large-Scale System...with Application, D. A. Wismer

Computer Organization and the System/370, H. Katzan, Jr.

FEEL LEFT OUT?

Do you feel like you always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keep abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173a DCL.

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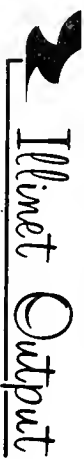
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CONTENTS

PAGE

| | |
|------------------------------------|----|
| WELCOME, ASSOCIATE DIRECTOR! | 2 |
| SAVING MONEY! | 2 |
| PLANNING AS OPTIMIZATION | 3 |
| GEE! MORE CPU-ANA | 9 |
| CODECHECK ON EXPRESS AND SAVE | 10 |
| ESTIMATING COSTS | 11 |
| EXTENDED HOURS FOR EXPRESS AND ATS | 15 |
| 360 SCHEDULE OF OPERATIONS | 16 |
| SELECTED LIBRARY ACQUISITIONS | 17 |
| APL TYPEWRITER KEYBOARD | 18 |
| COMPUTER ANAGRAM ANSWERS | 18 |
| FEEL LEFT OUT? | 19 |

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

WELCOME, ASSOCIATE DIRECTOR!

We are pleased to announce that Dr. David L. Stonehill has accepted the position of Associate Director of the Office of Computing Services. This position includes the responsibilities of the past Technical Director, Dr. Friedman, who has assumed full-time duties in the Department of Computer Science.

For the past four years, Dr. Stonehill has managed the computing and mathematical support facilities at the NASA Goddard Institute for Space Studies in New York City. That facility is operated under an outside commercial contract to NASA and has approximately the same general mission that CSO has for this campus. Services provided include operation of an IBM 360/95 and professional groups providing programming and mathematical analysis for the members of the NASA staff.

Before going to Goddard Institute, Dr. Stonehill was a member of a group at Brookhaven National Laboratory, doing research in high energy physics (hydrogen bubble chamber work). This experience included design of a terminal network for acquisition, retrieval, and display of experimental data. Dr. Stonehill received his Ph.D. in physics from Yale in 1962.

Dr. Stonehill has just recently taken over his duties at CSO and we of the staff are enthusiastically looking forward to working with him.

SAVING MONEY!

Because computing funds seem to be scarcer than usual this year, we have dedicated the majority of this issue to helping you get the most for your computing dollar. Two of our articles, PLANNING AS OPTIMIZATION and ESTIMATING COSTS, were written by the consulting staff and provide suggestions for eliminating

unnecessary expense. Additional copies of these articles are available in the Consulting Office.

The Consultants will soon have more detailed suggestions concerning efficient computing for particular languages in new handouts to be available in the near future.

If you have any particular problems with optimizing your use of the computer, you should see the Consultants. They will be glad to show you how to use our facilities as efficiently as possible.

PLANNING AS OPTIMIZATION

The purpose of this article is to explain some basic methods by which you can make the best use of your time and the computer's time. For most research applications (and most others for that matter), the cost and time of planning, writing and debugging a program far outweighs the cost of running the completed program. Indeed in many cases only a single successful run is required. We will consider planning, writing and debugging here as being of major interest and will not discuss coding efficiency for particular programming languages. Coding efficiency is of major importance but it is worthless when used in a poorly designed program. The section on Planning has been partially extracted from a paper by Professor D. B. Gillies, Department of Computer Science, University of Illinois.

Planning:

The first thing to do of course is to determine whether or not the computer can be an aid to solving your problem. While the computer operates at lightning speed, it does require a precise set of instructions and data to execute properly. In some cases the time and effort required to prepare these instructions and data is greater than that required by hand calculations. On the other hand, if the program is

well written, it can be used repeatedly with different sets of data and possibly it can be of use to others. In other cases you may require results which are beyond the capability of the computer or for which no methods of solution are yet developed. In these cases the development of computer methods might be a more extensive project than the original. Here again, though, once the methods are developed, they can be used repeatedly and by others if the programs are well written. The consultants at DCL will help you to determine the feasibility of using a computer for your needs.

Assuming that you have decided to develop a program, the next step is planning an approach. At this point you should, as thoroughly as possible, define what results you want and what input will be available to obtain these results. At this point it is wise to give consideration to the programming language or combination of languages which you might use, but don't commit yourself. We will discuss two general approaches to solving a given problem.

The first is inductive reasoning. This means that given a difficult problem, you replace it by a simpler problem along the same lines. Solve it and work gradually to more complex forms until you reach the original problem. This is especially useful when you have to learn as you go along. You can gradually build up your programming knowledge and methods and gain insight into the original problem.

The second method is somewhat more orderly and can be more efficient, but it requires that you have fairly detailed knowledge of the problem to be solved and that you have a pretty good grasp of the language you'll be working with as you will have to know what the language is capable of doing. This method consists of analysis and synthesis.

That is, given a problem, assume that it can be solved. Replace it by two or more subproblems whose solution could imply the solution of the original problem. Keep breaking down subproblems until you have a set, all of which you can solve easily. This is called analysis. Now solve the subproblems and work your way back up until the whole problem is solved. This latter is called synthesis. If subproblems are as independent as possible (probably implemented via well-designed subroutines) the program is said to be modular. If the correct choice of subproblems or of basic operations allocated to subroutines is made, so no duplication of similar operations occur, then we say that the program enjoys functional isolation. Thus it is not just analysis into a hierarchial structure that matters, but into a good hierarchial structure. Done well, the resulting programs can be remarkably easy to code, debug, modify, and use. For instance, you can test these subroutines by using small calling programs called "drivers" which merely call the subroutines passing them all forms of input. When they are all tested they are ready to go together and will be largely error free.

These two methods can be combined. For instance, at some point during the inductive process you should know enough about the problem that you could employ analysis and synthesis. Conversely, you could employ analysis to define subproblems and then solve each of them by induction.

Coding:

Once you have your problem well-defined and have decided on an approach to solving it, you should try to pick the most suitable language for the program. This decision should be based on the following criteria:

- 1) Language capabilities
- 2) Languages with which you are already familiar
- 3) Resources available for the language
- 4) Ease of debugging in a language

Language Capabilities: Different programming languages each have their own Language Capabilities: Different programming languages each have their own strong and weak points, often by design. Some are oriented towards numerical applications, some towards string and text manipulation, some towards systems applications, and some towards various types of simulation.

Familiar Languages: Knowing a programming language well can help you at all stages of program development. It can help you to determine quickly whether a given solution is programmable in that language. It can help you to make intelligent choices for program structure and data structure. If you find that you must use a language that you don't know, be sure that you learn it by practice. Run many test programs (possibly some form of your subproblems) until you develop a "feel" for the language. This will save you many coding errors and keep you from running up blind alleys.

Resources: This point cannot be stressed enough. It is possible that there is a specialized language which is designed to solve precisely the type of problem you have. In addition there exist extensive libraries of subroutines for some languages. Once you have analyzed your problem you can check with the Consultants to find out if what you need is available. It is quite possible that you will only have to write a "calling" program which utilizes available subroutines.

Ease of debugging: Different languages vary widely in the debugging facilities which they provide. Some provide practically none, others are oriented mainly towards debugging. You will have to decide how much debugging capability you need. Assembly language provides extremely limited assembly diagnostics and no execution time diagnostics. FORTRAN G provides good compile-time diagnostics, but sketchy execution time error checking. WATFIV (another FORTRAN compiler) gives excellent debugging information at both compile-time and execution-time. PL/I provides reasonably good diagnostics at both compile time and execution time. During early stages of development, it is wise to use a good debugging compiler (if one is available). You might want to change at later stages since debugging compilers produce more and longer executing code.

Debugging:

Chances are that no matter what you write you will have to rewrite and modify it a number of times before it works correctly. If you follow a few simple practices you can significantly reduce the number of debugging runs. As this is where you will spend most of your time, it is of great importance. First of all, document all of your work completely as you go along. This applies to the planning stage as well as coding. You should probably end up with more documentation than code. This will help you to find major and minor logical flaws and it will enable you to make changes and additions with much less effort, not to mention the help it will give to someone who is trying to help you do debugging. Use comments liberally throughout your

code, and as you change the code, change the corresponding comments. In this way you will be able to easily make changes a year later if necessary. Other people may want to use your program or parts of it, but it will not have much value if they don't understand it, and you've forgotten it. You will probably appreciate this more if you have occasion to use or modify a subprogram written by someone else.

Before you submit a program for execution, check it carefully by hand for errors, checking especially your most recent changes. If you're not sure something will work, check the manuals or with the Consultants.

If you can keep your subproblems small enough (and if they are written in FORTRAN G, WATFIV, or Assembler) you can check them out on the Express line for fast turnaround.

Avoid coding "tricks" when possible. They are hard to understand and debug and are not always more efficient. If you do use them be sure that they are well-documented as to their function. Straightforward code is usually more efficient, but even if it is not, it will save you coding and debugging time.

Make sure that you understand the structure of your programs, and that this structure is "visible" in the code. When naming variables try to use mnemonic names and ones that are not easily confused with each other, (e.g., don't use both TEST0 and TESTØ). Whenever a subroutine is called, it should check, if possible, whether variables are within the allowable limits.

Good luck!

DID YOU KNOW?

The first 360/195 has been installed - at McDonnell Douglas in St. Louis. They also have two 370/155s, and 370/165, a 360/85, and some other 360s installed, plus some small 370s on order. (Maybe this item should be printed in dollar-green ink on envy-green paper).

GEE! MORE CPU-ANA

In the following scrambles, part of each sentence is the definition, and part is an anagram of the answer. One or more consecutive words may need to be unscrambled to get the correct result. For example, in 'People who can do arithmetic in base 2 are brainy.', arithmetic in base 2 is the definition and an anagram of brainy* is the answer. In some cases a word is taken as a single letter (i.e., be is b, see is c, etc.) as follows: 'Business programmers say "Be cool." 'The definition comes from business programmers and the answer from an anagram** of b cool. See how easy it all is? Incidentally, all the answers are computer terms. (For answers, see p. 18)

1. Source code is converted to object code by me, lass.
2. RCA leaves computer business; sells carpets.
3. A shock from a current surge is enough to make you simple.
4. This is a language scientific programmers rant for.
5. This terminal has no big bugs; just an occasional petty eel.
6. Two new channels? Exult! IPL 'em!

* binary

**COBOL

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4. This is a language scientific programmers rant for.
5. This terminal has no big bugs; just an occasional petty eel.
6. Two new channels? Exult! IPL 'em!

* binary

**COBOL

7. I won't budge until I solve this programming problem.
8. O yell when the other computer company shows up.
9. Type I software is SO confusing!
10. Some devices are as slow as molasses in a peat bog.
11. My, Tess, do you run HASP?
12. Chaldee? Max, I base 16 other languages on it.
13. This trig function is so nice.
14. Can a logical operation remove a louse cervix?
15. Even with twice the accuracy I copied no rubles.

CODECHECK ON EXPRESS AND SAVE

Although you may not be able to make production runs on Express, we urge you to do your codechecking on that system. Your turnaround, is of course, very short and your job will actually cost less than if you ran it under HASP. The Express hours have been extended (see EXPANDED HOURS FOR EXPRESS AND ATS, in this issue) so that you can now use Express for codechecking at almost any time. In addition, SOUPAC users can now also use Express for checking the syntax of their jobs with the new SCANSOUP feature.

SCANSOUP, a SOUPAC syntax scanner, is now currently available on HASP and on Express. SCANSOUP performs a syntax check on any SOUPAC program deck. It can be invoked by:

```
// EXEC SCANSØUP
//SYSIN DD *
    SOUPAC program
/*
```

Normally, if you don't have any user JCL or more than 4 ID cards, you can just substitute a // EXEC SCANSØUP card for either your // EXEC SØUP or // EXEC SØUPAC card and run the job on Express. Upon correcting any errors, return the original EXEC card to the deck in place of the // EXEC SCANSØUP card, add

user JCL, additional ID cards, and your data, and your job is ready to be run on HASP.

When running SCANSØUP, the data deck should not be included it will stop scanning when it reaches the END SØUPAC card and any additional cards will be flushed, you will be charged for the flushed cards and tie up the facility longer than necessary.

All specific questions about SCANSØUP should be referred to the SØUPAC Consultants, 138 DCL.

ESTIMATING COSTS

Features have been added to the system which allow it to estimate the cost of a job before execution. This is done to help minimize the possibility of your overspending or wasting your resources. This estimate is made on the basis of ID card parameters which are either specified by you or are defaulted to a fixed value. In addition to the cover charge and setup (disk/tape mounting) charges, there are now ID card parameters which pertain to every chargeable item for a job except for Calcomp plotter time and cards read. The estimate for cards read is added as the cards are read. The estimate is based on the same formulas that are used for charging except that it is based on estimates rather than actual usage. The estimated cost is compared to:

- 1) The amount of money left in the PS#
- 2) The maximum \$/job and lines/job constraints requested for the PS#
- 3) If the PS# is sub-allocated, the estimate is compared to the amount of money left for this individual.

If the estimate exceeds one of the above limits, the job is "flushed" from the system. There are two important points to consider. First, if the system can recognize the PS #, DEPT code, and CODEWORD you will be charged the cover charge regardless of whether or not the job executes. Secondly if the estimate based on everything except cards read falls within the above limits, then the cards will be counted (and the cost added to the estimate) until the end of your job or until the total estimate exceeds one of the limits. In the latter case, the job will be "flushed", but you will be charged for the number of cards counted to that point. This can tend to be quite a burden for the user so it is suggested that you become familiar with the estimating system and exercise caution when submitting jobs.

You should know the \$/job and lines/job constraints for your PS# or user#. You should have a good idea of the number of cards you are submitting and how many setups. It is not too difficult to estimate the maximum number of lines you will print or cards you will punch or maximum region size the job will use. Estimating I/O requests and CPU time is more difficult and is just a matter of experience. It is recommended that you examine your output each time you run, as statistics for each job step are listed with the JCL. Below is a list of each of the ID card parameters which are pertinent to charging and a description of their use.

| <u>ID Card Parameters</u> | <u>Use</u> |
|---------------------------|--|
| TIME= | maximum allowable CPU time for a job |
| LINE= | maximum number of lines to be printed |
| CARDS= | maximum number of cards to be punched |
| IØREQ= | maximum number of input-output requests to be allowed for this job |

REGION= maximum number of kilobytes used by any step of this job

PRINT= specifies YES, NO, or destination; charging rate for lines is determined by destination.

PUNCH= same as PRINT, but for punched cards

See consultant handout #10 CHARGES for a detailed description of the present CSO rate structure.

Examples:

```
1) /*ID PS=9999,DEPT=TEST,NAME=JONES
   /*SETUP DEVICE=DISK,ID=DK0000
```

(998 cards)

If PS# 9999 has \$100 left and the maximum \$/job=\$4 and maximum lines/job=2000, then this job will be flushed after approximately 850 cards are read. This is because the default values apply for LINES= (500), IOREQ= (500), REGION= (116K) and TIME= (10 sec). There is also a \$1 setup charge. Using the formulas you can see that the basic estimate (from covercharge, CPU time, I/O requests, and Region) will be about \$1.60 plus \$.40 for lines. Adding the \$1 setup charge makes \$3. Cards will then be read and counted but after 850 cards or so the estimate will reach \$4 which exceeds the maximum \$/job constraint for this PS#. Since the Setups are ignored, the job will be charged \$3.

```
2) /*ID PS=9999,DEPT=TEST,NAME=JØNES,  
    /*ID IØREQ=2000,TIME=(1,0),LINES=4000,REGIØN=100K
```

(500 more cards)

If PS# 9999 has \$100 and maximum job constraints of \$50 and 3000 lines, this job will be flushed (for lines) even though it would cost only \$7.90.

```
3) /*ID PS=9999,DEPT=TEST,NAME=JØNES,  
    /*ID IØREQ=2000,TIME=(1,0),LINES=3000,REGIØN=116K,  
    /*ID CALCØMP=YES
```

(499 more cards)

```
// EXEC CALCØMP,PARM='TIME=30.00'
```

If PS# 9999 has \$10.00 and maximum job constraints of \$50 and 3000 lines this job will execute. If it uses all of 1 minute, 2000 IØREQ, 3000 lines and plots for 30 minutes, it will cost approximately \$18.37 and the PS # will be in the red by \$8.37. This happens since the estimator cannot check for plotter time. Note that even if the maximum job constraints for the PS # had been \$10.00 and 3000 lines, the result would be the same.

DID YOU KNOW?

Due to a new accounting procedure in the University Business Office, Stores Vouchers for less than \$10 amounts cannot be processed. Therefore, departments who wish to obtain magnetic tapes from our supply will now be billed \$10 a reel instead of \$9.88 as before.

EXPANDED HOURS FOR EXPRESS AND ATS

Express is now available at night 7 days a week, as shown on the Schedule of Operations on page 15. The special Express reader and printer at DCL will not be dedicated to Express usage during these expanded hours. In addition, Express will be made available during these expanded hours on an "as required" basis; that is, the Express Monitor will only be invoked if there are Express jobs actually in the system. This means that the turnaround for Express jobs during these expanded hours may not be as good as it is during the daytime hours for Express, since it is possible that initiation of the Express Monitor may have to wait on some other job in the system. During these expanded hours, therefore, Express will run when called upon, but in competition with other jobs in the system. REMINDER: Express may be called upon by including on the /*ID card the parameter SYSTEM=EXPRESS. Users running EXPRESS jobs during extended hours must include this parameter to be able to run under EXPRESS.

Also, ATS is now available on Saturday and Sunday and between 5:00 p.m. and 9:00 p.m., Monday through Friday, as shown on the Schedule of Operations, if specifically requested by a user. To request use of ATS during these hours, call the Routing Room, 333-6203, and advise the operator on duty of the request to use ATS. In addition, please advise the operator of the approximate length of time that ATS will be required, so that it may be removed from the system when no longer needed.

These two extensions of service are experimental. If difficulties arise, it may be necessary to withdraw them.

360 SCHEDULE OF OPERATIONS

In the absence of serious hardware or software difficulties which require a deviation, the System/360 will observe the following Schedule of Operations:

| | Mon. | Tues. | Wed. | Thur. | Fri. | Sat. | Sun. | |
|------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|------------|
| Midnight | | | | | | | | Midnight |
| | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL * | Express ** PLORTS APL | Express ** PLORTS APL | |
| 6:30 a.m. | | | | | | | | 6:30 a.m. |
| 7:00 a.m. | Syst. Prog. | | Syst. Prog. | | Syst. Prog. * | | | 7:00 a.m. |
| 8:00 a.m. | | Sched. Engr. | | Sched. Engr. | | | | 8:00 a.m. |
| 9:00 a.m. | | | | | | Express ** PLORTS ATS *** | | 9:00 a.m. |
| 10:00 a.m. | PLORTS ATS APL | PLORTS ATS APL | PLORTS ATS APL | PLORTS ATS APL | PLORTS ATS APL * | | | 10:00 a.m. |
| 11:00 a.m. | | | | | | | Syst. Prog. | 11:00 a.m. |
| | Express PLORTS ATS | Express PLORTS ATS | Express PLORTS ATS | Express PLORTS ATS | Express PLORTS ATS | Express PLORTS ATS *** | | |
| 4:00 p.m. | | | | | | | | 4:00 p.m. |
| 5:00 p.m. | | | | | | Express ** PLORTS ATS *** | Express ** PLORTS ATS *** | 5:00 p.m. |
| | Express PLORTS ATS *** | Express PLORTS ATS *** | Express PLORTS ATS *** | Express PLORTS ATS *** | Express PLORTS ATS *** | | | |
| 9:00 p.m. | | | | | | | | 9:00 p.m. |
| | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | Express ** PLORTS APL | |
| Midnight | | | | | | | | Midnight |

* On the first Friday of each month, Friday morning is changed to:

12:00 - 6:00 a.m. Express**, PLORTS, APL
6:00 - 10:00 a.m. Sched. Engr.
10:00 - 11:00 a.m. PLORTS, ATS, APL

** If required by the jobs in the system, and subject to the needs of other jobs in the system. The special Express reader and printer at DCL will not be dedicated to Express at these times.

*** Only if specifically requested (by calling 333-6023).

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

On The Management of Computer Programming,
G. F. Weinwurm

Computers for Engineers, B. Hodge

A Guide to Computer Literature, A. Pritchard

What Computers Cannot Do, I. G. Wilson and
M. E. Wilson

Techniques of Information Retrieval, B.C. Vickery

Managing The EDP Function, A. E. Ditri, John
C. Shaw, and W. Atkins

Computer Based Information Retrieval Systems,
B. Houghton

Informal Introduction to Algol 68, C. H. Lindsey
and S. G. VanDerMeulen

APL TYPEWRITER KEYBOARD

Most users of APL have a 2741 typewriter terminal with a standard correspondence keyboard. IBM provides a set of stickers which can be used to label the typewriter keys with the APL characters. These stickers may be ordered as an IBM manual, order no. GX20-1783-2. Orders may be placed through the Consultants, room 168 DCL.

COMPUTER ANAGRAM ANSWERS

1. assembly
2. SPECTRA
3. impulse
4. FORTRAN
5. teletype
6. multiplex (exult IPL m)
7. debug
8. Honeywell
9. OS
10. tape
11. system
12. hexadecimal
13. cosine
14. exclusive OR
15. double precision

In case you didn't work it out, the title is an anagram of COMPUTER ANAGRAMS.

FEEL LEFT OUT?

Do you feel like you're always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keepz abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173a DCL.

- ☐ Cancellation
- ☐ Address Change
- ☐ New Subscriber

NAME:

ADDRESS:

CITY:

DEPARTMENT:

EDITOR.....Nick Smith

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URBANA, ILLINOIS. 61801



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Computing Services Offices --- University of Illinois at Urbana-Champaign

KATHENATICS LIBRARY
216 ALTGELER HALL
CARPLS



Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

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December, 1971

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

CSO POLICY ON CLASSWORK

HOW WAS THAT AGAIN?

NEW PLOTS FEATURES

OUR READERS

NEW VERSION OF MPS

GOOD PRACTICES IN HANDLING CARD DECKS

SELECTED LIBRARY ACQUISITIONS

FEEL LEFT OUT?

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

2

3

4

7

8

8

10

11

CSO POLICY ON CLASSWORK

During the past years, a certain amount of class time has been used for purposes other than those intended by the class instructor. This misuse seemed small and was, therefore, not considered to be much of a problem. The past semester has seen such gross misuse of class Problem Specification numbers that the problem can no longer be ignored. Whereas, in the past, an occasional printout of "Snoopy" could be overlooked, now class numbers are being used to change features in OS and HASP, to hide data sets on User Disk packs, to generate hundreds of pages of information readily available in textbooks, to generate advertisements for money-producing ventures, and to "crash" certain portions of the system. In short, we have moved from an occasional nuisance to a situation where capricious use not only interferes with maintaining service, but, in some cases, amounts to substantial fraudulent use of state supported resources.

Although it has always been implicit, users of class Problem Specification numbers are urgently reminded that:

NO CLASS PROBLEM SPECIFICATION NUMBER SHALL BE USED FOR PURPOSES OTHER THAN THOSE DESIGNATED BY THE INSTRUCTOR WHO HAS REQUESTED THE NUMBER.

Responsibility for informing class users of this policy rests with the supervising faculty member, who shall also exercise reasonable diligence to prevent improper use of his class specification number. The Computing Services Office (CSO) will assist instructors in devising schemes to protect their PS numbers. However, CSO's prime responsibility is to maintain continuous and efficient service to the total campus community. If necessary, class specification numbers which are constantly misused will be cancelled until effective methods of protection can be implemented.

Furthur, we have recently begun directly charging departments for all computer-based classwork. Those

departments which have received allocations of money for computer-based classwork for this semester are, by now, aware of the impact that limited funds can have on their use of the computer.

CSO has also implemented a new accounting program which should provide instructors with more control over the expenditure of funds by their class. The Individual Accounting Program (IAP) allows an instructor or prime user to sub-allocate a Problem Specification number so that each student in the course has a unique user number with a preset amount of money sub-allocated to that student. CSO cannot encourage too strongly the use of IAP by instructors who teach large classes. The sub-allocation of a Problem Specification number can help prevent student misuse of class funds. It will not solve the problem of the bright student who finishes the required computer assignment and still has money left to play with. The instructor should stress to his students that a sub-allocation is considered to be a maximum allowable allocation and that all of the money does not have to be used.

CSO is charged with the responsibility of monitoring the use of the IBM 360/75 facility. We must prevent situations where capricious use of the computer, even under sub-allocated numbers, interferes with maintaining service. This type of use amounts to fraudulent use of state supported services. Therefore, we will not hesitate to treat unauthorized use as a serious offense and consequently recommend suitable action by the University. Suspected unauthorized use and/or malicious tampering with datasets, code words, etc., should be reported to Mr. Merlin J. Foster, 175 DCL.

HOW WAS THAT AGAIN?

(This article appeared in the November, 1971, issue of the University of Western Ontario COMPUTING CENTRE NEWSLETTER)

The Saturday night extended timesharing hours were instituted as a convenience to users, but they can have expensive side effects. A recent assignment to a class of novice programmers was a practical exercise on DO loops. Two students logged in Saturday night and executed their programs. When they got no response after a period of waiting, they decided that nothing was happening and left without logging out. On Sunday afternoon their jobs were finally killed, one by another programmer and the other by the operator when someone detached the job. Between the two programmers they had expended \$3500 and 15 hours of CPU time. We suggest that instructors of novice programmers thoroughly brief their students on the need to logout before leaving a teletype and on the dangers of assuming that nothing is happening when there is no response from the system when their programs are executing.

NEW PLORTS FEATURES

1. Additional CØPY command features:

The CØPY command now has the following form:

CØPY <FILE1> <N1> <N2> <L1> <L2>
(L2, L1, N2, N1 optional). Copy lines N1 through N2 of the named file into the currently opened file. The lines are placed in the currently opened file starting at line L1 and incremented by L2. If L2 is omitted, L2 = 1.0 is assumed.

CØPYS <FILE1> <N1> <N2> <L1> <L2>
Like CØPY but only the first 72 characters of each line are copied.

CØPYE <PS>.<NAME>.<FILE1> <N1> <N2> <L1> <L2>
Like CØPY but copies a file from a different PS and NAME.

CØPYL <FILE1> <N1> <N2>

(N2, N1 optional). Copy lines N1 through N2 of the named file into the currently opened file without altering the line numbers. (E.g., line 5.6 in the copied file becomes line 5.6 in the opened file.) Note that <L1> and <L2> are meaningless for this variation of the copy command.

Various forms of the copy command may be combined by appending the appropriate letters to the keyword CØPY. In this manner, e.g., CØPYS and CØPYE may be combined by specifying either CØPYSE or CØPYES.

Examples:

CØPYSL XYZ

Copies the first 72 characters of each line of file XYZ into the currently opened file without altering the line numbers.

CØPY XYZ 1 10 45 .1

Copies lines 1 through 10 of file XYZ into the currently opened file starting at line 45, then 45.1, 45.2, etc.

CØPYESL 9999.USER.XYZ 1 99

Copies the first 72 characters of lines 1 through 99 of file XYZ under PLØRTSID 9999.USER into the currently opened file without altering the line numbers.

NOTE: This is merely an extension of the current CØPY commands. All previously recognized forms of the CØPY command are still valid.

2. New commands now available:

RELØG

Does a LØGØUT, but instead of hanging up the phone, it re-initiates the LØGIN procedure. This is useful for dial-up lines.

?

After most error messages, if a ? is typed, a more detailed explanation of the error will be given.

3. New # command:

#TØ <XX> <message>

Sends <message> to terminal <XX>. This is useful for inter-terminal communications.

4. AEC calculator changes:

a) The restriction on the number of statements executed without I/O has been eased. If 200 successive statements are executed without any I/O being done to the terminal, the following message is printed:

200 STMTS; 'OK' ('NØ') TØ GØ(STOP):

This informs the user that he is in a loop but allows him to continue if he so desires.

b) The PRINT command now allows the printing of alpha-numeric data:

PRINT '<TEXT>';

Prints <TEXT> as output to the terminal.

c) Two new functions have been added:

SIGN(X); Returns +1 or -1 for X positive or negative respectively.

CHK(X); Returns Real(X) if IMAG(X)<1.D-15, or error if IMAG(X)>1.d-15.

DID YOU KNOW

It was brought to our attention that the default PLOT length in the cataloged procedure PLØTCS!P was 200

inches. Since 120 inches is the point at which a plot job will automatically go into HCLD, we lowered the default to 120 inches.

OUR READERS

Since we recently revised our mailing list, we thought it might be an appropriate time to look at just who receives our newsletter. The table below shows the academic areas of our readers.

ILLINET Mailing List

| | % of Total |
|------------------------------------|------------|
| Hard Sciences | |
| DCS, CAC, CSO, UADP | 30 |
| Engineering | 18 |
| Physics, TAM, MRL | 6 |
| Geology, Geography, SWS | 5 |
| Astronomy, Math | 3 |
| | <u>63%</u> |
| Biological Sciences | |
| Agriculture, Agronomy | 8 |
| Life Sciences, Medicine, Botany | 4 |
| | <u>12%</u> |
| Socio-Economic Sciences | |
| Psychology, Education | 5 |
| Law, Political Science | 5 |
| Economics, BADM, Accountancy | 2 |
| | <u>12%</u> |
| Administrative-Personnel | |
| Personnel Admin. & Student Affairs | 4 |
| Libraries | 3 |
| | <u>7%</u> |
| Other | |
| Mostly Fine and Applied Arts | 7 |
| | <u>7%</u> |

NEW VERSION OF MPS

MPS Version 2.9 has passed its preliminary tests and has replaced the current version (2.6) on the system. Version 2.6 will remain available for a while, in case there are problems with 2.9. If necessary, please see the Consultants for details on how to access the 2.6 version.

GOOD PRACTICES IN HANDLING CARD DECKS

(This article is taken from the Syracuse University Computing Center NEWS, Vol. 5, No. 1, July 15, 1971.)

This article contains several good practices that a user should follow in handling card decks. These practices are "good" both from the user's viewpoint and from a machine room operator's viewpoint, since the goal is to avoid lost decks, mixed-up decks, invalid punches (i.e., off-punched or multipunched columns), warped cards, etc. These practices are almost mandatory to keep one's sanity, let alone avoid lost runs, when one is handling several boxes of cards for a given job.

A. Card Deck Handling

1. Draw a diagonal line with a felt-tip marker from corner to corner across the top of the cards.
2. Mark the first and last card of any complete deck with something like: F/C, L/C. This aids the machine operator immensely in determining whether your complete deck was read in.
3. Print your name or initials and the program name on the top of the cards with the marker, possibly the date also.
4. On multiple boxes:

a. Print your name on each box, both top and front.

b. Clearly indicate on each box its order within the series and the total number of boxes, e.g., 1 of 1, 2 of 2, etc.

5. Don't use tight rubber bands around any card deck. This nicks and warps the deck, which then won't feed through the card reader. If you have them, use protector cards that are slightly larger and thicker than an IBM card.

6. On partially filled boxes, put a rubber band around the last 100 or so cards. This keeps the deck from sliding out of order.

7. Watch the humidity and your coffee cup. Nothing ruins a deck quicker than spilt liquids. Humidity is slower, but just as sure. The deck will warp and become unreadable.

8. Check the bottom edge of the deck, particularly at each end of the deck. Nicks, bends, separations of the card stock-all will cause poor feeding or card jams.

B. Back-up

1. If the deck is quite important, difficult, or painful to replace, etc., make a copy as a back-up. Don't rely on others to protect your deck as carefully as you do (or should do) - accidents happen.

2. If your deck will be read through the card reader several times, it will fray and get worn, leading to an eventual card reader jam. Each jam may destroy one or more cards. Make a copy as a back-up. In addition, consider compiling and storing your program as a load module on disk. Similarly, store your data on a disk or tape.

3. If you have several (i. e., more than two), boxes, why not store the program or the data on disk or tape. It's quite annoying for the operators to read lots of boxes into the card reader, only to find that the job was rejected by the system for some reason. It's even more annoying to you, since you lose that turnaround time. Use of tape for good, checked-out, data or programs is faster and better for you and the operations staff.

C. Miscellaneous

1. When updating a working deck, make a copy of the original deck and make the changes to the copy. That way you will have something to fall-back on if the changes don't work.

2. Mark the top edge of each changed card with a felt-tip marker to identify the change.

3. To help you estimate the number of cards, there are approximately 144 cards per inch in a card deck.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Sets and Boolean Algebra, H. Rueff and M. Jerger

Computer Structures: Readings and Examples,
C. Gordonbell and A. Newell

Introduction to Data Processing, C. Feingold

The Use of the Computer In Planning, W. K. Benton

Fitting Equations to Data, C. Daniel, F. S. Wood,
and J. Forman

FEEL LEFT OUT?

Do you feel like you're always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keep abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173A DCL.

- ☐ Cancellation
- ☐ Address Change
- ☐ New Subscriber

NAME:
ADDRESS:
CITY:
DEPARTMENT:

EDITOR.....Nick Smith

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OFFICE, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN,
URBANA, ILLINOIS 61801

MATHEMATICS LIBRARY
210 ALGELD HALL
CAMPUS



Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 4, No. 1

January, 1972

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

NON-FUNDED COMPUTER TIME!

TIMESAVING SURVEY

PLC, SPITBØL NOW ON EXPRESS

KEYPUNCHING AREA NEWS

GOT ANY BRIGHT IDEAS?

PLØRTS CHANGES

WOULD YOU BELIEVE THAT...

MULTIPLE REGRESSION ON SCOUPEX!

BEGIN AND LEAVE REVISIONS

FORTRAN G-H DIAGNOSTICS MODIFICATIONS

SELECTED LIBRARY ACQUISITIONS

FELL LEFT OUT?

THE LIBRARY OF THE

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UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

2

2

4

5

6

7

9

10

10

12

13

15

NON-FUNDED COMPUTER TIME!

The Computing Services Office would like to extend its services to the user community by making available computer time which would otherwise remain unused. This computer time will be available to users for emergency use on a basis of non-interference with funded computer work. No charge will be made to the users for such use of the machine; however, no commitment on turnaround time or service availability can be made by CSO.

In order to preserve accounting records and job control, we will require each user to submit a copy of the form on the next page with any job to be run under this extended service. These forms may be obtained from the operators at operator attended job entry points. The request must be signed by a faculty member or by the Director or Associate Director of CSO.

We hope that this increased service will be of value to the campus community and we welcome suggestions on further improvements to our center.

TIMESHARING SURVEY

The Computing Services Office is currently conducting a survey of timesharing services. We are evaluating our own systems, PLØRTE, ITS, and APL, and investigating other systems that might better serve our users' needs. We have just recently conducted a campus-wide survey to assess what type of timesharing services our users require. If the survey missed you, and you would like to offer some suggestions, give Bob Penka a call at 333-6276 or drop us a note:

Timesharing Survey
c/o Information Desk
Main Lobby, DCL

January, 1972

3

Request for Non-Funded Computer Time

Name: _____ Department: _____

Purpose:

Course Number or P.S.# Equivalent:

Computer Estimate

Core _____ Time _____ I/O Requests _____ Lines Printed _____

Class Use ()

Research Use () Signature _____

CSO Authorization

() Faculty Signature

() ID and Code Destroyed

Date _____ Authorized Signature _____

PLC, SPITB/L NOW ON EXPRESS

PLC, a compile-link-go subset of PL/I, is now available on EXPRESS. A manual detailing the parameters, statement subset, and diagnostic capabilities is available in the Consultants' Office. EXPRESS PLC recognizes the system parameter set with the following exceptions:

1. LIST is inoperative on EXPRESS
2. PAGES=4 is the default and upper limit
3. TIME=(0,2) is the default and upper limit (2 secs.)
4. Only one \$PL/C will be recognized at the start of the program. A second one will end the job.

To execute a PLC program use the following control cards:

```

/*ID
// INHC    PLC
//SYSIN DD *
$PL/C
    (PL/I source program)
$DATA
    (data cards)
/*

```

SPITB/L, a SNØLØL subset, is also now available on EXPRESS. The manual describing SPITB/L is available in the Consultants' Office. The differences between the system and EXPRESS implementations are that on EXPRESS:

1. Parameters to the compiler are ignored; the defaults are L=16K, H=1000K, B=52, D=10, R=31, T=5, P=4, and C=0. (See the manual for parameter descriptions). The time limit of 5 seconds (T=5) includes both compilation and

execution times. LEXPRESS limits on cards and lines are also enforced.

2. Batching is not allowed on LEXPRESS. If a ./* is encountered, it is treated as a /*, and any remaining cards are flushed.
3. Two system error codes have been added:

12.098 Compiler error.
12.099 Attempt to rewind file.
Not allowed on LEXPRESS.

To execute a SPITBØL program on LEXPRESS use the following control cards:

```
/*ID  
// EXEC SPITBØL  
//SYSIN DD *  
SPITBØL program  
data (if any)  
/*
```

DID YOU KNOW?

A University of Washington Computer Center user has written a simulation program which uses CalComp to write in Arabic.

KEYPUNCHING AREA NEWS

- 1) Effective January 31, 1972, there will no longer be a 3rd shift (midnight through 8:00 a.m.) in the keypunch area. The decision to close the shift is due to the lack of use of the IBM 360/20 and Service Keypunching on this shift.

The IBM 360/20 and Service Keypunching will then be available from 8:00 a.m. to midnight on a Monday through Friday schedule.

- 2) In the past, the keypunch area printed decks of cards on multilith mats for users upon request. These mats could then be taken to an offset printing service for multiple copies.

It has been decided to discontinue this service effective immediately. We will now list decks of cards on the back side of printer paper upon request. The user can then take the listing to the Stenographic Bureau on campus and have the pages INDEXED. Multiple copies can be made by offset printing after the pages are INDEXED.

- 3) Users that submit jobs for service keypunching will notice a change if the cards are verified. Previously, all cards that were verified would have a notch in the 80-column edge. Now there are two machines that are also used by the keypunch operators for verifying that punch a "2-3" punch in "column 81" if the card is verified correctly. If the card had to be corrected, only a "2" punch will appear in column 81. Effective immediately, all cards that are verified by the keypunch staff will have either a notch in the 80 column edge or a "2" or "2-3" punch in column 81. The punches that appear in column 81 will not present a problem when reading the cards through other machines.

GOT ANY BRIGHT IDEAS?

Suggestions and a few test examples are being solicited for an automatic simultaneous differential and algebraic equation solving system now under construction. Those solving large systems of differential equations are asked to contact Alfred

Whaley by campus mail at 310 DCL or by telephone at 333-8426.

PLØRTS CHANGES

User Accounting - PLØRTS users with suballocated PS numbers are now required to supply their User Number and Codeword when logging-in. The connect time will then be charged to the individual User Number. The log-in procedure for suballocated PS numbers will be modified as follows:

1. In response to the line

ENTER PS#, USER NAME.

the user will enter his PLØRTS PS# and name as usual.

2. PLØRTS will then send the following request:

ENTER USER#, CØDI.

The user should type in his User Number and Codeword separated by a comma and containing no blanks.

3. If the Codeword is correct for the specified User Number and the User Number is active, the user will be logged-in. Otherwise step 1 will be repeated.

NOTE: The log-in procedure is unchanged for non-suballocated PS numbers.

Abbreviated Command Syntax - Also, the following abbreviations for open mode commands are now recognized.

- L for LIST
- LN for LISTN

L/ for LIST
D for DLL
C for CLUSE
E for ENTE

Miscellaneous Changes: Occasionally changes will be made to the PLØPTS system and will be documented in the ØPLEMSC files. Users are advised to check these files in order to keep abreast of current PLØPTS changes. The ØPLEMSC 0 file is an index for the other ØPLEMSC files. These files may be accessed by typing ØPLEMSC n followed by LISTE, where n is the number of the ØPLEMSC file which is desired.

Direct Filing of Output to PLØPTS: PLØPTS users may now have their printed output sent directly to a PLØPTS file instead of to a printer. This is accomplished by specifying PRINT=PLØPTS on the ID card. The output is filed under the PS# and name on the ID card in a file with the same name as the job number. If the printed output cannot be completely filed, the job is rescheduled for local printing. Possible reasons that the job may not be filed are:

1. The PS# and name on the ID card are not valid for PLØPTS usage.
2. The block allocation for the PS# and name has been exceeded.
3. The file is full.

If PRINT=PLØPTS is specified, all printed output will be filed. The // EXEC FILE program is available as before for filing selected parts of the output for HASP jobs.

The PRINT=PLØPTS feature should be particularly useful for filing EXPRESS output.

THIS WILL ALLOW ALMOST INSTANT TURNAROUND FOR EXPRESS TYPE JOBS FROM A PLØPTS TERMINAL!

Example:

If job K0009876 is run with the following JCL cards:

```
/*ID PS=9999,DEFT=XYZ,NAME=USER  
/*ID SYSTEM=EXPRESS,PLINT=PLØITS
```

It will run on the EXPRESS system, and the output will be filed in file K0009876 under PLØITS identification 9999,USER.

WOULD YOU BELIEVE THAT...

(These quiz definitions appeared in the Triangle Universities Computation Center ITUSLIML (January, 1972) and came from beginning computer classes at the University of North Carolina - Wilmington.)

1. "disks are random access storage"
2. "// is called the JCL card"
3. "Control is shifted from the main program by a call exist statement"
4. "1 byte = 4 bites"
5. "A channel program transfers to another facility for reading or writing"
6. "Channel program means that CPU goes to another computer to work"
7. "In-core compiler is a compiler with a built-in computer"
8. "Storage which is not sequential access is adjacent access"
9. "Off-line refers to our disk-pool; it goes with our account code"

10. "CISCO is what programmers call a machine they are not very fond of"
11. "*/ is a very special JCL card used for lots of important functions in all programs"

MULTIPLE REGRESSION ON SOUPEN!

The EXPRESS statistical system, SOUPEN, now includes a routine to do Ordinary Least Squares. This routine, called MULTIPLE REGRESSION, also calculates the Durbin-Watson statistic, the standard error of regression coefficients, the coefficient of multiple correlation, and T ratios to test the hypothesis that the regression coefficients are significantly different from zero. For a complete description of the SOUPEN system and the various routines available, see the Statistical Consultants, 138 DCL.

DID YOU KNOW?

According to the Purdue University Computing Center NEWSLETTER, the Computer Center there is currently engaged in programming eight different computers, each in its own assembly language.

BEGIN AND LEAVE REVISIONS

New versions of the BEGIN and LEAVE Assembler Language macros have been placed on the system. Writeups may be listed on the 360/20, in the same manner that FORTRAN library writeups may be listed.

Some of the new features of BEGIN and LEAVE:

Multiple entry points may be specified on one BEGIN macro.

Any combination of general registers may be saved and restored.

The user may specify the address to be loaded into the base register.

Multiple base registers may be specified.

Register 13 may be used as base register in a non-reentrant program.

Generation of a save area may be suppressed.

Register definition EQU statements will be automatically generated if requested.

An extended save area of arbitrary length may be requested. This is particularly useful in a reentrant program.

Non-standard return points may be specified with the LEAVE macro.

The new versions of the macros are compatible with the previous versions, with a few minor exceptions:

If the save area is named on the BEGIN macro, the length attribute of the name will no longer be four; it will be the length of the save area (default value, 72).

If multiple entry points are specified on the BEGIN macro, an extra word will no longer be added onto the save area for storage of the entry point number. In the new version, the entry point number will be in register 14, but will not be stored by the macro.

Global variables were not formerly used by these macros. The new versions use several global variables whose names begin with G. Global names of this form should not be used.

in assemblies employing BEGIN or LEAVE macros.

The parameter IL=NOI will now have a special effect. Please see the writeup for details.

DID YOU KNOW?

The initialization (IASOI) of any user provided disk pack will be done by CSO, with the cost charged against the user FS number. This cost will be approximately \$3.00 for each disk pack.

FORTRAN G-H DIAGNOSTICS MODIFICATIONS

Changes to certain FORTRAN G-H service routines have been implemented to improve the diagnostics for execution time program errors. The new diagnostics are like those provided by the "modified error handler" which was previously made available. The traceback will be made more readable, with the most common hexadecimal manipulations performed automatically. Seven errors which presently result in abends (OC1-OC7) without any diagnostics will be "trapped" with a message and traceback. FORTRAN G users will have the option and means of specifying any list of variables to be printed in labeled, numeric format (called a "dumplist") in event of an error. FORTRAN C and F users will have the option and means of requesting monitoring of CPU time, so that a message and traceback can be obtained if a program exceeds its time limit. Note that the new traceback and seven additional error messages will be automatic, while the dumplist and time trap require slight program changes.

Users presently using the current "modified error handler", SYS9.TRACE, will no longer need the special JCL LIBFILE parameter. Standard FORTRAN control cards will call for the new error handler. It is expected

that the vast majority of FORTRAN users will find the new traceback format easier to interpret. The diagnostics for abends 001-007 should eliminate most situations requiring a re-run of a job with a core dump. Dumps can be obtained in event of an error, as always, by adding ",PAUSE=DUMP" on the EXEC FORTLDG0 card, but will rarely be needed, since a dump list can provide a "post-mortem" look at selected data in a convenient format.

A dump list can be created by adding two statements to a source program. (FORTRAN G only, not FORTRAN H). The time tran can be invoked by adding one statement to a program (FORTRAN G or H). A writeup giving details for these features is available from the Consultants.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Introduction to Elementary Mathematical Logic,
A. A. Stolvar

Project Control Standards, D. H. Brandon and M. Gray

Multidimensional Scaling and Related Techniques in
Marketing Analysis, Marketing Science Institute

Approximate Methods in Optimization Problems,
P. Demyanov and N. Malinin

Organizational Growth Through Decision Making,
B. K. Pone and F. C. Pone

Cost Considerations in Systems Analysis, G. I. Fisher

Associative Information Techniques, J. M. Jacks

Computers and Brains, J. P. Schade and J. Smith.

Chemical Laboratory Computerization, A. P. Krieg, et. al.

Computers For Management, H. Sturt and R. Yearsley

Handbook of Basic Transistor Circuits and Measurements,
P. D. Thornton, et. al.

Value Engineering, A. H. Mudge

Cybernetic Machines, T. H. Nemes

Computer Innovations in Marketing, L. Konrad

The Art of Systems Analysis, E. Pyrne, et. al.

Digital Design, I. F. Richards

FEEL LEFT OUT?

Do you feel like you're always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keep abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173a BCL.

- ☐ Cancellation
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EDITOR.....Nick Smith

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February, 1972

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CONTENTS

PAGE

| | |
|--------------------------------------|---|
| STARTING THE NEW YEAR OFF RIGHT | 2 |
| RELEASE 20.6 | 2 |
| REARRANGEMENT OF SYSn. DATA SETS | 3 |
| PLORTS--SCAN AND REPLACE COMMANDS | 3 |
| REMINDER TO RECYCLE (WHAT AND WHERE) | 5 |
| DID YOU KNOW THAT... | 6 |
| FLEE LEFT OUT? | 7 |

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

STARTING THE NEW YEAR OFF RIGHT

On January 12, 1972 a general CSO user's meeting was held in Room 115 JCL. Introductory remarks were made by Dr. David L. Stonehill, Associate Director of CSO. These remarks were followed by discussions about:

- a) hardware group functions and future plans - Cliff Carter;
- b) Software group functions and future plans - Bob Penka;
- c) system measurement and evaluation - Bob Skinner; and
- d) user communication - Jerry Beck.

The meeting was opened to general questions and discussion once the formal presentation by CSO members ended. Response to the user's meeting was not as widespread as it could have been, but with the introduction of regular user meetings it is hoped that the user community will find that they provide a valuable forum in which to make their needs, wishes, complaints and (dare we hope!) satisfactions known.

RELEASE 20.6

In preparation for the future implementation of Release 20.6 of the IBM operating system, CSO has set up test times to allow our users to check out those programs that are presently operational. During these periods, no charges are made for running jobs. Since they are test periods and since no charges are made, guarantees cannot be made that jobs will run correctly. An execution time limit of 1 minute is placed on each job to be tested. However, provisions will be made to exceed this limit when a need is shown. These test times are held from noon to 4:00 p.m. on selected

Sundays. CSO users who are interested in availing themselves of the test time should check the 48 hour notice board in the lobby of LCL for times and dates of future test Sundays.

REARRANGEMENT OF SYSn. DATA SETS

On Wednesday, December 29, 1972 many of the SYSn. data sets were moved to different disk packs. At the same time the catalog and all cataloged procedures in SYS1.PRØCØI were changed to reflect the new locations. Changes to SYS1.PRØCØSK were also made at that time.

The new arrangement of system packs has UISYS1, UISYS3 and UISYS5 completely filled with system data sets and UISYS2, UISYS4 and UISYS6 completely empty for use as scratch space. The latter three packs are completely scratched at every warm start, thus ensuring that no data sets are kept permanently on those packs. These packs should not be scratched by the individual user, as more than one job may be using the pack at any one time.

The contents of the two drums will be unchanged.

The SYS4. data sets will no longer be on the UISn disk packs, making that space available for user data sets.

FLORTS--SCAN AND REPLACE COMMANDS

Two new file editing commands have been added to the Florts system. One, the SCAN command, may be used to search a file for a particular string. The second, the REPLACE command, is used to replace one character string with another within a range of line numbers.

The syntax of the commands is as follows:

SCAN '<STRING>' <L1> <L2> (Abbreviation S)

<L2, L1 OPTIONAL>. This command specifies that the currently open file should be scanned from line <L1> to line <L2> until the character string <STRING> is encountered. When <STRING> is encountered the line in which <STRING> is found is typed to the terminal. If <L2> is omitted, <L2> is taken to be the end of the file. If <L1> is omitted, it is taken to be the first line in the file.

REP '<STRING 1>' '<STRING 2>' <D1> <D2> (Abbreviation R)

<D2 OPTIONAL>. This command specifies that every occurrence of <STRING 1> in line <D1> (THROUGH <D2>) should be replaced by <STRING 2>. If <D2> is omitted, the replacing is done in line <D1> only.

The character strings are enclosed in apostrophes. An apostrophe within the character string should be coded as a double apostrophe.

The maximum length of the character string specified is 30 characters. The minimum length of <STRING> and <STRING 1> is 1 character. The minimum length of <STRING 2> is no characters.

EXAMPLES:

```
SCAN '100 FORMAT' 35 100
    scan lines 35 through 100 of the currently open
    file for the first occurrence of the character
    string
    100 FORMAT
```

```
S 'ABCD''123'
    scan the entire currently open file for the first
    occurrence of the character string
    ABCD'123
```

```
REP 'FRMAT' 'FORMAT' 34
```

replace any occurrence of the character string
FRMAT
in line 34 of the currently open file with the
character string
FORMAT

R '''123' '' 20 35
replace with a null string (i.e. DELETE) any
occurrence of the character string
'123'
in lines 20 through 35 of the currently open
file.

REMINDER TO RECYCLE (WHAT AND WHERE)

The following letter was received by the Editor of the ILLINET OUTPUT from a member of HIPS. It is reprinted in its entirety.

To the Editor:

Though paper is probably one of the least expensive items university officials and students think they can buy, through wastefulness it is costing the environment a very high price, and if we take another look, it is also cutting into our pockets. While our national forests are being cut at a fantastic rate, conservation lobbies are encouraging paper recycling companies to ameliorate this situation.

Here at the U. of I. through the planning and support of HIPS and the Twin City Reclamation and Recycling Service and the cooperation of the University, ledger paper is beginning to be recycled. Ledger, or bond-quality paper, is any hard paper suitable for printing or writing (e.g., Xerox, mimeo, ditto, computer output, writing tablets, etc.) Since about 80 per cent of University garbage is recyclable paper, the University can help save our national resources, reduce its contribution to the critical

sanitary landfill problem, and bring down the cost of paper production.

Barrels marked "Ledger Paper" have been put in about eight buildings including the Administration Building and the Digital Computer Lab. For the most part, cooperation and enthusiasm has been shown by the University staff and students toward recycling paper--to these people we are deeply grateful. Some folk, however, believe a waste paper barrel is a waste paper barrel and contribute a few pop cans, toothpaste cartons, hand towels, and tissue paper. We would appreciate it if you would please place these items in a waste basket and not in a ledger paper barrel.

Marilyn Halty
Recycling Committee
Housewives Involved in
Pollution Solutions

DID YOU KNOW THAT...

During the month of January, CSO replaced the 1 million bytes of IBM slow speed core with 2 million bytes of AMPLX slow speed core. A minor reconfiguration of the hardware in Room 194 DCL allowed this effective doubling of slow core to be accomplished with no increase in the hardware budget of CSO. The results, although not immediately apparent to the user community, are a positive step towards CSO's goal of providing better service to all users.

FEEL LEFT OUT?

Do you feel like you're always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keep abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173a DCL.

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| <u>CONTENTS</u> | <u>PAGE</u> |
|----------------------------------|-------------|
| CSO SHORT COURSES - SPRING, 1972 | 2 |
| FAREWELL TO THE IBM 360/20 | 4 |
| REMINDER TIME | 4 |
| ACROSTIC #1 | 6 |
| CONSULTANT WANTED | 8 |
| NEW PLORTS FEATURES | 8 |
| SELECTED LIBRARY ACQUISITIONS | 10 |
| FEEL LEFT OUT? | 11 |

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

CSO SHORT COURSES - SPRING, 1972

During the Spring Semester, 1972, the Computing Services Office will offer free, non-credit short courses in FORTRAN, PL/I, and the use of the CalComp plotter. These courses are open to all faculty, staff, and graduate students. Enrollment is limited to 26 persons per course, and a course may be cancelled if it draws little or no response. Those planning to attend should register by picking up a registration form (a copy follows description of courses) at the DCL Information Desk, 333-6465.

Schedule of Courses

Elementary FORTRAN IV The beginning fundamentals of the language, including: real and integer constants and variables, arithmetic statements, IF and GO TO statements, simple input/output statements, DO loops, and one-dimensional arrays. There are no prerequisites.

M W, 7 pm - 9 pm, March 6 through March 22, 239 DCL.
Instructor: Beth Richardson

Intermediate FORTRAN IV Multi-dimensional arrays, subprograms, statement functions, formatted input/output, double precision, complex, and logical constants and variables, and DATA, COMMON, EQUIVALENCE, and type statements. The prerequisite is a knowledge of elementary FORTRAN IV.

T TH, 10 am - 12 noon, April 4 - April 20, 237 DCL.
Instructor: Rebecca Wetzel.

Elementary PL/I The beginning fundamentals of the language, including: PROCEDURE, BEGIN, and END statements, the DECLARE statement, attributes of variables, and format of constants, the assignment statement and simple input/output statements, CALL, GO TO, IF, DO, and ON statements, and built-in functions. The prerequisite is a working knowledge

March, 1972

3

of another higher-level programming language, such as FORTRAN or COBOL.

M W F, 10 am - 12 noon, April 10 - April 21, 252B DCL.
Instructor: Bob Penka.

CalComp The complete spectrum of routines for using the CalComp plotter with FORTRAN, ranging from GRAPHZ to the new CCP1 windowing routines. The prerequisite is a knowledge of intermediate FORTRAN IV.

T TH, 7 pm - 8:30 pm, March 7 - March 23, 241 Altgeld.
Instructor: Bob Goldberg.

REGISTRATION FORM: CSO SHORT COURSES - SPRING, 1972

Name _____ Date _____

Department _____

Campus Address _____

I plan to attend

_____ Elementary FORTRAN IV

_____ Intermediate FORTRAN IV

_____ Elementary PL/I

_____ CalComp

Return to: Rebecca Wetzel, 167 DCL.

FAREWELL TO THE IBM 360/20

On March 17, 1972, the IBM 360/20 was physically removed from the Computing Services Office. The declining use of the IBM 360/20 over the past several months prompted the department to take this step.

Users, using a new IBM 360 utilities package-MØD20, will be able to submit their jobs to the computer for list, reproduce, sequence, sort, move columns, convert, and gangpunch. Details concerning MØD20 are available in the Consulting Office, 166 DCL. Sometime later hardware will be incorporated into the IBM 360 system which will permit the interpreting of cards punched by the system. Until that time the user may submit jobs of 200 cards or less to the keypunch staff for interpreting on an interpreting keypunch. The charge for this service will be \$1.00 per hundred cards interpreted.

Users may also submit sorting and/or counting jobs to the keypunch staff to be done on the mechanical sorter. (Charge = \$17.75 per hour of sorting or counting). The service in the keypunch area will be available from 8:00 a.m. through midnight on a Monday through Friday schedule.

DID YOU KNOW THAT...

On February 15, 1972 a change in scheduling on the IBM 360/75 now allows access to and use of ATS at all times during which the system is available except from 10:00 pm - 11:00 pm each day. The one-hour exception allows for the dumping of ATS files, etc. for proper backup.

REMINDER TIME

Occasionally generalizations bear repeating. The following article was excerpted from the Freas-Rooke

Computer Center at Bucknell University, Lewisburg, Pennsylvania.

"Don't wait until the last minute"! How many times do we hear this phrase? It is commonly used around the center; by instructors to their students regarding their computer assignments, and to faculty and administrators who request work to be done on the machine. The "machine" is an invaluable tool for the university community. It can produce results many times faster than any previous methods. It behooves all who use the computer to do some sound preplanning when a solution to their assignment or problem, an algorithm, is desired. All output from the computer is the result of a program or set of programs' execution. The program is the result of an algorithm's design. Whether you design the algorithm yourself, or a center's programmer does it for you, the following should be kept in mind:

1. Include all input in your specification. Omitting one data record can drastically change the program requirements and void a computer run.
2. Specify in detail the procedures required to transform your input into the designated output. Do not forget the exceptions to the procedures.
3. Ask yourself what is desired from the program. Check and double check that all output is clearly defined.

Computer technology has not reached the point where a person can talk into a microphone and have the computer produce the results he desires. It takes a computer program to accomplish this, and this is not easily written and debugged overnight. Remember that the computer's execution of a program is a very small percentage of the time that is spent on a problem's solution. Designing the algorithm and preparing the program require the bulk of the time. If instead of procrastinating, the user adequately prepares his algorithm, he will receive the desired results in a much shorter period of time.

ACROSTIC #1

| | |
|---|---|
| A. Operation of difference engine or card punch | 75 145 65 106 1 169 26 102 117 125 |
| B. Assyrian goddess of love | 101 5 114 77 3 46 |
| C. Complement, change sign | 4 184 161 92 162 66 |
| D. A way to multiply by two | 108 132 142 12 49 |
| E. Writings rather more occult than IEM manuals | 195 103 35 22 164 137 |
| F. County of northern England | 34 11 121 159 136 128 177 67 133 |
| G. Another number divides it | 2 47 104 78 90 37 33 98 |
| H. An inverse trig function | 143 80 113 13 68 154 94 129 94 99 |
| I. Compiles, assembles | 190 58 163 128 81 10 178 40 79 61 |
| J. Communications device | 151 69 179 160 105 14 53 89 192 |
| K. Shun, avoid | 43 138 62 150 9 122 |
| L. A loader often does this | 116 167 193 162 110 187 28 196 156 |
| M. Prophet, 8th century B.C. | 84 41 141 115 21 |
| N. Console lights, e.g. | 135 68 25 148 118 168 59 17 39 174 |
| O. Angular cut or indentation | 64 7 42 176 191 |
| P. Former U. S. president | 20 147 60 155 152 183 |
| Q. Computational procedures | 38 93 172 175 100 36 149 123 97 126 |
| R. Printable in Illinet Output | 30 55 16 44 71 130 18 119 87 107 |
| S. Some early computers were | 146 126 31 170 166 181 19 |
| T. Adjusted, altered | 180 140 70 29 83 194 120 8 |
| U. Plus, minus, or, not, etc. | 62 56 15 134 111 73 96 51 163 |
| V. Ph. D. thesis | 109 109 139 27 52 185 144 76 127 153 63 171 |
| W. Area of philosophy | 95 45 74 158 66 23 |
| X. Pertaining to milk | 112 57 91 32 72 48 |
| Y. Act as, via software | 173 124 6 50 157 24 131 85 |

When you've guessed a word, fill in the dashes, and also write each letter in its correspondingly numbered square in the diagram. When all the squares are filled in, you will have a quotation from a published work. Dark squares indicate the ends of words. If there is no dark square at the right side of the diagram, the word carries over to the next line. As you see words and phrases forming in the diagram, enter the letters you can guess into the diagram and also into the blanks in the defined words. Work back and forth from words to diagram until the puzzle is solved. The initial letters of the defined words spell the name of the author and the title of the work from which the quotation was taken.

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| 1 | A | | 2 | G | 3 | B | 4 | C | 5 | B | | 6 | Y | 7 | O | 8 | T | 9 | K | 10 | I | | |
| | | 11 | F | 12 | D | | | 13 | H | 14 | J | 15 | U | | | 16 | R | 17 | N | 18 | R | 19 | S |
| 20 | P | | | 21 | M | 22 | E | 23 | W | | | 24 | Y | | | 25 | N | 26 | A | 27 | V | 28 | L |
| 29 | T | 30 | R | 31 | S | 32 | X | 33 | G | 34 | F | | | 35 | E | 36 | Q | 37 | G | 38 | Q | 39 | A |
| 40 | I | 41 | M | 42 | O | 43 | K | | | 44 | R | 45 | W | 46 | B | 47 | G | 48 | X | 49 | D | 50 | Y |
| 51 | U | 52 | V | | | 53 | J | 54 | H | 55 | R | | | 56 | U | 57 | X | 58 | I | 59 | N | | |
| 60 | P | 61 | I | | | 62 | K | 63 | V | 64 | O | 65 | A | 66 | C | 67 | F | 68 | N | 69 | J | 70 | T |
| | | 71 | R | 72 | X | 73 | U | 74 | W | | | 75 | A | 76 | V | 77 | B | 78 | G | 79 | I | 80 | H |
| 81 | I | | | 82 | U | 83 | T | | | 84 | M | 85 | Y | 86 | W | 87 | R | 88 | H | 89 | J | 90 | G |
| 91 | X | 92 | C | 93 | Q | | | 94 | H | 95 | W | 96 | U | 97 | Q | 98 | G | 99 | H | 100 | Q | 101 | B |
| 102 | A | 103 | E | 104 | G | | | 105 | J | 106 | A | 107 | R | 108 | D | 109 | V | 110 | L | 111 | U | 112 | X |
| | | 113 | H | 114 | B | 115 | M | 116 | L | 117 | A | 118 | N | 119 | R | 120 | T | 121 | F | | | 122 | K |
| 123 | Q | 124 | Y | 125 | A | 126 | S | | | 127 | V | 128 | F | 129 | H | | | 130 | R | 131 | Y | 132 | D |
| 133 | F | 134 | U | | | 135 | N | 136 | F | | | 137 | E | 138 | K | 139 | V | 140 | T | 141 | M | 142 | D |
| 143 | H | 144 | V | 145 | A | 146 | S | | | 147 | P | 148 | N | 149 | Q | 150 | K | | | 151 | J | 152 | P |
| 153 | V | 154 | H | 155 | P | 156 | L | | | 157 | Y | 158 | W | 159 | F | 160 | J | | | 161 | C | 162 | L |
| 163 | I | 164 | E | 165 | U | | | 166 | S | 167 | L | 168 | N | 169 | A | 170 | S | 171 | V | 172 | Q | 173 | Y |
| | | 174 | N | 175 | Q | 176 | O | 177 | F | 178 | I | 179 | J | | | 180 | T | 181 | S | 182 | C | 183 | P |
| 184 | C | 185 | V | 186 | Q | | | 187 | L | 188 | I | 189 | V | | | 190 | I | 191 | O | 192 | J | | |
| 193 | L | 194 | T | 195 | E | 196 | L | | | | | | | | | | | | | | | | |

CONSULTANT WANTED

The Computing Services Office is in the process of filling a full-time vacancy in the User Services' Consulting Area. Qualifications should include extensive experience with OS/360 Assembly Language, FORTRAN, and PL/I. CSO would like to ask the local user community to refer any interested persons with a desire to work with People to G.P. Beck, Jr., 118 Digital Computer Lab, 333-6492.

DID YOU KNOW THAT...

A statistical package named OSIRIS (organized set of integrated routines for investigation with statistics) is now available. Manuals describing OSIRIS may be found in the Consulting Office. All questions and requests for consulting help concerning OSIRIS should be referred to:

Dick Roistacher
Center for Advanced Computation
317 ACB
3-7164

NEW PLOTS FEATURES

The following features have been recently added to PLOTS:

- A. Larger PLOTS Files;
Line numbers for PLOTS files may now be as large as 9999.999
- B. Expanded SCAN and REPlace commands;

The SCAN command now has the following forms:

SCAN '<STRING1>' <L1> <L2> (Abbreviation S).
This is the basic command which scans for the first occurrence of the specified character string.

SCANA '<STRING1>' <L1> <L2> (Abbreviation SA).
This scans for all occurrences of the character string.

SCANV '<STRING1>' <L1> <L2> (Abbreviation SV).
This scans for a variable named <STRING1>. The string is found only if preceded and followed by a non-alphanumeric character. Thus "A" in "X=A*5;" can be distinguished from "A" in "FORMAT".

SCANVA (SVA), or SCANAV (SAV) may be used to combine the scan all and scan variable features.

The REPlace command now has the following forms;

REP '<STRING1>' '<STRING2>' <X1> <X2> (Abbreviation R).
This is the basic replace command which replaces all occurrences of <STRING1> with <STRING2> and prints each line which is changed.

REPX '<STRING1>' '<STRING2>' <X1> <X2> (Abbreviation RX).
This form of the replace command does not print out the lines which are changed. This is useful if a large number of lines are going to be altered.

REPV '<STRING1>' '<STRING2>' <X1> <X2> (Abbreviation RV).
This replaces a variable named <STRING1> with a variable named <STRING2>. (See SCANV command).

REPXV (RXV), or REPVX (RVX) may be used to combine the replace variable and replace without print features.

DID YOU KNOW THAT...

Effective Monday, February 21, 1972, a new class was entered on the system 360/75. This job class is "V" and is assigned to jobs greater than 350K core residency. This could result in longer than usual turnaround time for this class job if there are many jobs using smaller amounts of core.

SELECTED LIBRARY ACQUISITIONS

Some of the most recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Pattern Recognition and Machine Learning, K.S. Tu

Concepts of Communication, E.F. Beckenbach, C.B. Tompkins

An Introduction to Bayesian Inference in Econometrics,
A. Zellner

Methods in Computational Physics, B. Alder, S. Ternbach,
and M. Rotenberg

The Computer Prophets, Dr. J.M. Rosenberg

Debugging Techniques in Large Systems, R. Rustin

PL/1 Programming for Engineering and Science, D. Stoutemyer

The Patent Office, S. V. Jones

Simulation in Social Science: Readings, H. Guelzkow

ANSWERS TO PUZZLE ON PAGE 6

Minsky - Matter, Mind, and Models

A man's model of the world has a distinctly bipartite structure: One part is concerned with matters of mechanical, geometrical, physical character, while the other is associated with things like goals, meanings, social matters and the like.

FEEL LEFT OUT?

Do you feel like you're always the last to know what's happening at the Computer Center? Do you find it hard to keep up with all the technical changes? If so, why not join our readers and keep abreast of the latest developments. Just complete and return this page to Editor, ILLINET OUTPUT, 173 DCL.

- [] Cancellation
- [] Address Change
- [] New Subscriber

NAME:
ADDRESS:
CITY:
DEPARTMENT:

EDITOR.....173 DCL

PUBLISHED TEN TIMES YEARLY BY THE COMPUTING SERVICES
OFFICE, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN,
URBANA, ILLINOIS 61801



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Computing Services Offices --- University of Illinois at Urbana-Champaign

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Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 4, No. 4

April, 1972

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

| | <u>PAGE</u> |
|-----------------------------------|-------------|
| HASP IMPROVEMENT | 2 |
| NEW VERSION OF WATFIV! | 2 |
| SOFTWARE SUPPORT POLICY OF CSO | 2 |
| MPSX AVAILABLE | 6 |
| USER SERVICES SCHEDULE | 7 |
| NEW 360/75 SCHEDULE OF OPERATIONS | 8 |
| SELECTED LIBRARY ACQUISITIONS | 9 |
| FEEL LEFT OUT? SPEAK UP! | 11 |

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

HASP IMPROVEMENT

On Monday, March 6, 1972, HASP was changed to provide more satisfactory processing of printed output copies. If a job exceeds its estimated line count, as given on the /*ID card, then HASP will decrease the print copy count by 1 and allow the job to continue generating lines of output. Only if the print copy count finally becomes zero will the job be given an ABEND A22. In this way, HASP will give as many complete copies of the output as will fit the given line estimate.

NEW VERSION OF WATFIV!

Version 1.3 of WATFIV is now available. A list of the errors corrected in this version is available in the Consulting Office, 166 DCL.

SOFTWARE SUPPORT POLICY OF CSO

Currently, CSO operates under the following software support policy. Users are urged to consider this support policy before choosing a particular processor or subsystem.

LEVEL 1 "FULL-SUPPORT"

- 1) System programming support which includes implementation of new versions, updates to current versions, and full refunds for any problems encountered with the particular software.
- 2) Full consulting support; that is, all consultants on duty are trained to help in these areas. At least one consultant or programmer is available for referral of

"difficult" problems and analysis of software errors.

- 3) Full documentation available which includes:
 - a) Language manual when applicable
 - b) Programmers guide when applicable
 - c) Entry in CSO Users Guide

LEVEL 2 "SIMI-SUPPORT"

- 1) System programming support (see LEVEL 1)
- 2) Part-time consulting support is available unless noted. Users may consult the schedule posted on the 360 Bulletin Board or outside the consulting office. If the consultants-on-duty cannot contact any CSO personnel who can help, users may leave the material and will receive a response within 24 hours. Analysis of more difficult problems of software errors may necessarily be significantly slower than Level 1.
- 3) Limited Documentation is available:
 - a) CSO handout
 - b) Language manual or programmers guide must be ordered

LEVEL 3 "NON-SUPPORT"

- 1) System programming support. Most of this area is implemented and updated by users and refunds will not be given for software errors.
- 2) Consultants will attempt to help, but will usually be less knowledgeable than the user. Using general systems knowledge, consultants will often be able to provide some insight or suggestions. In some cases users who have

implemented the software will provide consulting advice, and CSO consultants will refer users to them when possible.

3) Documentation will be provided when possible.

The contents of all levels are continually monitored, with regard to both systems use and consulting use for possible further support in the future.

PRESENT SUPPORT POLICY

LEVEL 1 "FULL-SUPPORT"

Control Programs

HASP-OS/360
PLORTS
EXPRESS

Job Processors

IBM Loader and Linkage Editor
CALCOMP Monitor

Programming Languages

| | |
|---------------|------------------------|
| IBM Level G-H | FORTTRAN IV |
| WATFIV | FORTTRAN IV |
| Level G-F | Assembly Language |
| IBM Level F | Programming Language/I |
| PL/C | PL/I subset |

All IBM and UOI Utilities

Subroutine Libraries (general use)

Scientific Subroutine Package
FORTUOI Subroutine Library
IBM FORTTRAN & PL/I Libraries

Level 2 "SEMI-SUPPORT"

| | |
|---------|--|
| ALCØL | Programming language |
| APL | Interactive terminal system |
| ATS | Administrative terminal system |
| COBOL | Commercial data processing language |
| CSMP | System modeling program |
| *ICES | Civil engineering system |
| MPS | Linear programming |
| *OSIRIS | Set of integrated statistical routines |
| PL/GO | PL/I subset |
| SNOBOL | String manipulation language |
| SPITBOL | String manipulation language |
| *RPG | Report Generator |

*No consulting support at this time.

LEVEL 3 "NON-SUPPORT"

| | |
|--------------|--|
| BASIC | Programming language |
| BIOMED | Statistical programs |
| ECAP/PCAP | Electronic circuit analysis program |
| FORMAC | Mathematical formula manipulation language |
| GPSS | Simulation |
| LISP | List processing language |
| PUBLIC | Library programs |
| SIMSCRIPT II | Simulation language |
| SOUPAC | Statistical programs |
| SPSS | Statistical programs |

Users should be aware that the Level 3 list is not necessarily complete. OS/360 allows users to implement their own systems and users may or may not notify CSO. Generally all processors or subsystems not in LEVEL 1 or 2 should be considered Level 3 type support.

DID YOU KNOW THAT?

EXPRESS is now available to users whenever IASP is available.

MPSX AVAILABLE

A new version of MPS called MPS Extended (MPSX) is now available.

MPSX is invoked as follows:

```
//      EXEC      MPSX
//MPSX.SYSIN DD *
```

MPSX program

```
/*
//GØ.SYSIN DD *
```

data

```
/*
```

Manuals on MPSX are available in the Consulting Office.

April, 1972

7

USER SERVICES SCHEDULE

The following schedules for user services will be effective through April and May, 1972. Vacations, holidays and illness may result in a variance of these schedules.

| | MON | TUE | WED | THU | FRI | SAT |
|---|-----------------------------|------------------------|--------------------------|--------------------------|--------------------------------|-----------|
| Accounting Information Rm 1/1 LCL (333-6760) | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | |
| Information Desk Lobby 2-L (333-6465) | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | |
| Consultant Office Rm 166 LCL (333-6133) | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | 8am - 5pm | |
| R. Wetzel | 8am - 12noon | 1pm - 5pm | | 1pm - 5pm | 8am - 12noon | |
| S. Carlson | 8am - 11am | 11am - 5pm | 8am - 11am | 6pm - 10pm 11am - 3pm | | 8am - 1pm |
| S. Greenberg | 9am - 11am 12:30pm - 3pm | 9:30am - 11am | 12:30pm - 3pm | 8:30am - 11am | 8:30am - 11am 12:30pm - 3pm | |
| S. Leighton | 11am - 1pm | 9am - 1pm 6pm - 6pm | 11am - 1pm 6pm - 10pm | 4pm - 6pm | 11am - 1pm | |
| D. Subject | 1pm - 5pm | 6pm - 10pm | 1pm - 5pm | | | |
| S. Konrad | 2pm - 5pm | 6pm - 10pm | 2pm - 6pm | | | |
| R. Foster | 4pm - 5pm | | 8am - 12pm 3pm - 5pm | 6pm - 10pm | 3pm - 5pm | |
| G. Glace | 6pm - 10pm | | 6pm - 10pm | | 8am - 12noon | |
| R. Long | 6pm - 10pm | 2pm - 4pm | | 2pm - 4pm | 2pm - 4pm | |
| J. Finke | | 8am - 12noon | | 8am - 12noon | | 8am - 1pm |
| K. Berchert | | | | 8am - 1pm | 1pm - 5pm | |

NEW 360/75 SCHEDULE OF OPERATIONS

The 360/75 Schedule of Operations is changed to include the following:

a. System Programming

0630 - 0900 - Tuesday and Thursday
0500 - 0700 - Monday, Wednesday, and Friday
0800 - 1600 - Sunday

b. Scheduled Engineering

0700 - 0900 - Monday, Wednesday, and Friday
*0700 - 0900 - Saturday (Ampex)
**0600 - 1000 - Friday

c. Software

Express available starting at 0900

The schedule changes should benefit the user community by having more preventative maintenance to detect and prevent any possible machine malfunctions.

*Scheduled Ampex engineering every other Saturday
**On the first Friday of each month

SELECTED LIBRARY ACQUISITIONS

Some of the more recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Guide to the Design of Real-Time Systems, H.F. Rothestein

Nanosecond Pulse Techniques, W. Meiling, F. Stary

The Confidence Crisis, P.L. Dressel, F.C. Johnson, P.M. Marcur

Men, Machines, and Modern Times, E.E. Morison

Process Analysis by Statistical Methods, D.M. Himmelblau

Computers and Telecommunications: Issues in Public Policy, S.L. Mathison, P.M. Walker

Putting MIS to Work, H.L. Enger

A prolific of Mathematic Logic, H. Delong

Bright Future Careers With Computers, R. Laskow, A.N. Feldzamen

An Electronic Cash and Credit System, D.T. Cannell, T.A. Gibbons, C.P. Grote, J. Henn, J.B. Kennedy, M.B. Muir, N.D. Potter, R.H. Whitby, A.H. Anderson

Deisgn of a Computer - The Control Data 6600, J.E. Thornton

Four Language Technical Dictionary of Data Processing, Computers, and Office Machines, W. Schuppe

Handbook of Probability and Statistics with Tables by
Burington, May

Information, Mechanism and Meaning, D.M. Mackay

The Interaction of Science and Technology, W.D. Compton

Fault Diagnosis of Digital Systems, H.Y. Chang,
E.G. Manning, G. Metze

Basic Principles of Data Processing, J.A. Saxon,
W.W. System

Computer Applications in Management, J. Birkle,
R.B. Yearsley

Microprogramming: Principles and Practices, S.S. Hasson

Introduction to Computer Science, H. Levinson,
W.A. Sontance

Quasars and High-Energy Astronomy, K.N. Douglas,
I. Robinson, J.A. Wheeler, A. Schild, N.J. Woolf,
E.L. Schucking

Encyclopedia of Library and Information Science 1,
A. Kent, H. Lancour

Information Systems: Data Processing and Evaluation,
G. Dippett, W.C. House

PL1 for scientific Programmers, C.T. Fike

FEEL LEFT OUT? SPEAK UP!

Do you have a contribution for ILLINET OUTPUT -
an article you feel should be published, or do you have

a suggestion,

a criticism,

a question,

or something

about which you would like CSC to know? Please send
them to:

USER SERVICES
175 DCL

including your name, department, address and phone
number.

EDITOR.....173 DCL

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URBANA, ILLINOIS 61801



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MATHEMATICS LIBRARY
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Illinet Output

Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 4, No. 5

May, 1972

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

| <u>CONTENTS</u> | <u>PAGE</u> |
|---|-------------|
| INQUIRY STATION | 2 |
| MPSX | 2 |
| CONSULTING SOFTWARE SUPPORT | 2 |
| USER-GUIDE AND PLOTS GUIDE | 4 |
| NEW VERSIONS OF PROBLEM SPECIFICATION FORMS AND ACCOUNT FORMS | 4 |
| FULL SUPPORT OF SOUPAC | 5 |
| SELECTED LIBRARY ACQUISITIONS | 5 |
| GENERAL USER'S MEETING | 6 |
| FEEL LEFT OUT? SPEAK UP! | 7 |

THE LIBRARY OF THE

SEP 19 1972

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

INQUIRY STATION

SUGGESTION: In the Catalog to the Fortran library (FORTUOI), could you put the date of the latest write-up revision beside the name of each program. Then a user with a current copy of the catalog could tell whether his program write-ups are out of date.

RESPONSE: The write-ups now listed in the Index (Catalogue) to the FORTUOI library are up-to-date as of March 21, 1972. Since adding revision dates to each item in the Index would require a complete reconstruction of Index, we propose to enter new revised dates when individual write-up entries are revised. At the time of such revisions, we also propose to add the number of lines contained in a write-up as well as the number of cards in the program being described. These additional facts should prove of use to CSO users in determining costs for listing the write-ups and punching the subroutines.

MPSX

MPSX became the system standard version on Sunday, April 9, 1972. On that date MPS and the MPS cataloged procedure were removed.

CONSULTING SOFTWARE SUPPORT

The April issue of ILLINET OUTPUT outlined the Software Support policy of CSO. What follows is a schedule of the availability of those consultants who are particularly knowledgeable in specific processors and subsystems. This schedule is effective through May, 1972. Variations to the schedule can occur due to illness or examinations.

May, 1972

3

Consulting Area - Software Support
Level 2

| Subsystem or Processor | Consultant |
|------------------------|--|
| ALGOL/COBOL | R. Foster |
| APL | S. Konrad, R. Foster |
| ATS | R. Long, R. Foster |
| CSMP | R. Long, R. Wetzel |
| MPS | S. Greenberg |
| SNOBOL/SPITBOL | S. Leighton, S. Greenberg, S. Konrad, R. Foster |
| PLAGO | All Consultants |

| | MON | TUE | WED | THU | FRI |
|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| ALGOL/ COBOL | 1500-1700 | | 0800-1200 | 1800-2200 | 1500-1800 |
| APL | 1400-1800 | 1800-2200 | 0800-1200 1400-1800 | 0900-1300 1800-2200 | 1300-1800 |
| ATS | 1500-1700 1800-2200 | 1400-1600 | 0800-1200 | 1400-1600 | 1400-1800 |
| CSMP | 1800-2200 | 1300-1700 | | 1300-1700 | 0800-1200 1400-1700 |
| MPS | 0900-1100 1300-1500 | 0900-1100 | 1300-1500 | 0900-1100 | 0900-1100 1300-1500 |
| SPITBOL/ SNOBOL | 0900-1800 | 0900-1300 1800-2200 | 0800-2200 | 0900-1300 1800-2200 | 0900-1800 |
| PLAGO | 0800-2200 | 0800-2200 | 0800-2200 | 0800-2200 | 0800-1800 |

USER-GUIDE AND PLORTS GUIDE

CSO User Guide and PLORTS Guide manuals are now available for sale at the Illini Union Bookstore. The cost for these manuals are:

| | manual # | charge |
|----------------|----------|--------|
| CSO User Guide | CSO-USER | \$2.50 |
| PLORTS Guide | CSO-1000 | \$1.00 |

User/Instructors who possess active research and class Problem Specification numbers may purchase copies of these manuals at CSO, at the same cost, and have them charged to their PS number. For charging of manuals to a PS#, manual request cards are available at the Information Desk, DCL Lobby and in the Consulting Office, 166 DCL. When a Research user has filled out a request card, it should be taken to Room 171 DCL. At present, Instructors who wish to charge CSO manuals to their class PS numbers can do so if the manual request card is presented personally to Room 171 DCL. Within a few weeks means will be made available for any active PS number to carry with it a flag which expresses the instructor/user's wishes as to whether CSO manuals can or cannot be charged to the PS number. At that time, no manual can be charged to the PS number unless the flag is appropriately set.

It should be emphasized that the Illini Union Bookstore cannot charge manual costs to Problem Specification numbers.

NEW VERSIONS OF PROBLEM SPECIFICATION FORMS AND ACCOUNT FORMS

Version 7 of the Account Information Form and Version 9 of the Problem Specification Form are now available. On Monday, May 1, 1972 these versions will be the only versions accepted by CSO for processing. Due to the changes in these forms, they cannot be

processed by CSO until a revised form of the software accounting system has been installed. Therefore, any of these forms that are submitted prior to May 1, 1972 will be held until May 1, 1972 to be processed. Until May 1, 1972 the current Problem Specification Form (8) and the Account Information Form (6) will be accepted for processing.

FULL SUPPORT OF SOUPAC

Concerning SOUPAC, some users were evidently misled by the "Present Support Policy" of CSO as outlined in the April, 1972 issue of Illinet Output, Vol. 4, No. 4. The SOUPAC system is not supported by CSO in deference to the SOUPAC Office (of the Department of Computer Science) which originally developed and currently does support the SOUPAC system. In fact, SOUPAC, because it is the only comprehensive statistical system which is a product of the U. of I., enjoys "full support" in the most complete sense of the term. The SOUPAC Office is located in 138 DCL, and is open Monday through Friday, 8 a.m. to 5 p.m.; phone 3-2170.

SELECTED LIBRARY ACQUISITIONS

Some of the more recent additions to the Department of Computer Science Library (260 DCL) are listed below.

Technology Forecast for 1980, Weber, Teal and Schillinger

Coherent Optical Computers, K. Preston, Jr.

Constructions and Combinatorial Problems in Design of Experiments, D. Raghavarao

Dynamic Programming and Its Application to Optimal Control, R. Boudarel, J. Delmas, and P. Duichet

Managerial and Engineering Economics, A. Reisman

Mathematical Software, J.R. Rice

Semiconductors, H. Wolf

Computer Logic, A. Rose

Fluidic Systems Design, C.A. Belsterling

Applied Graph Theory, C.W. Marshall

Human Factors Applications in Teleoperator Design and Operation, E.G. Johnson and W.R. Corliss

The Psychology of Computer Programming, G.M. Weinberg

Decision Theory and Human Behavior, W. Lee

Recursive Function Theory and Logic, A. Yasuhara

Data Processing in Biology and Geology, J.L. Cutbill

Multivariate Analysis, M.M. Tatsuoka

GENERAL USER'S MEETING

A general CSO User's Meeting will be held at 3:00 p.m. on Wednesday, May 17, 1972 in Room 115 DCL. Watch the 48 hour-notice board in the DCL Lobby for details regarding the agenda of the meeting.

May, 1972

7

FEEL LEFT OUT? SPEAK UP!

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an article you feel should be published, or do you have

, a suggestion,

a criticism,

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Computing Services Offices --- University of Illinois at Urbana-Champaign

Vol. 4, No. 6

June, 1972

The ILLINET OUTPUT newsletter provides a means of communication between the staff and users of the University of Illinois network of computer facilities.

CONTENTS

PAGE

CSO USER'S MEETING

THE LIBRARY OF THE

2

RELEASE 20.6 TESTING

SEP 19 1972

3

PROC CHANGES

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

4

ABEND

5

HOW TO GET ILLINET OUTPUT NEXT FALL

11

CSO USLR'S MEETING

A CSO user's meeting was held in Room 115 DCL on Wednesday, May 17, 1972, at 3:00 p.m. The primary purpose of the meeting was a discussion on "Time-Sharing--Present Status and Future". CSO announced the following:

1. The Administrative Terminal System (ATS) will be transferred to the campus Administrative Data Processing department's 360/50 on July 1, 1972.
2. APL will be continued through August 31, 1972; it will not be available on the 360/75 after that date.
3. The BASIC programming language will become available through the existing PLØRTS facility, at a date to be announced (before the beginning of the Fall, 1972, semester). BASIC will be placed into PLØRTS on an experimental basis before test time; users who wish to experiment with the language during the summer should contact the consultants for further details. BASIC manuals may be ordered from IBM through the consultants.

The BASIC to be implemented is the one present in CALL/ØS, adapted to the PLØRTS system. It is a fairly complete version of the language, including a GET and PUT capability on user-created work (data) files. Line-by-line compilation is not available, but CSO is adding the ability to change and inspect values of variables in a program, and re-execute with those changed values. This added facility will be announced when it becomes available.

During a question-and-answer session, the following points were raised:

1. CSO mailed out 1600 questionnaires, and distributed more, requesting user advice on prospective time-sharing facilities; 53 were returned. Of these, 80% requested BASIC.
2. The AEC calculator will be available in parallel with the BASIC language, if small-scale, desk calculator computations are needed.
3. The facilities of the PLØRTS filing system will be reviewed, to see if additions are necessary. Suggestions for additional PLØRTS commands or capabilities should be directed to the consultants.
4. Charging policies for the BASIC (or PLØRTS) service have not been determined; those who wish to budget for class use of interactive BASIC should request funds on the basis of last year's requirement. If adjustments are required later, the present uncertainty will be taken into account.
5. A new Express system will be tested, beginning in June. A further announcement will give details.

RELEASE 20.6 TESTING

For the past several weeks CSO has been offering free computer time on Sundays for testing a new version of the 360 Operating System (OS). Plans are underway to upgrade from the present OS Release 18.6 System to OS Release 20.6. In addition a new version of Express which will provide additional flexibility will also be implemented.

Each new release of the Operating System also includes a new version of the associated processors, i.e., assemblers, compilers, utility programs, etc.

Present plans are to implement Release 20.6 and the new version of Express with the Release 18.6 compilers, etc., on June 19, 1972. If problems are encountered with Release 20.6, CSO will be able to return to Release 18.6 with little impact on the service offered to our users.

As soon as it is determined that the Release 20.6 system is stable, the Release 20.6 processors will be installed.

It is hoped that the gradual upgrade to the new system will keep to a minimum any possibility of serious problems affecting normal operations.

Please consult the 360 Notice Board for further details concerning testing and implementation of Release 20.6 and the new version of Express.

PROC CHANGES

It is proposed to make changes in the system catalogue procedures. The purpose of these changes is to provide greater efficiency (and lower cost) for FORTRAN, PL/I, Assembler language, Algol, RPG and COBOL users.

In the past, we have received valuable suggestions about the procedures, and we solicit further suggestions or comments from the user community. In particular, we would like comments on the following courses of action we are considering.

1. To make the 88K version of the linkage editor the default version.

2. To eliminate the XLKGØ procedures (where X is replaced by FØRT, PL1, CØB, ASM, ALG, and RPG), on the grounds that this would discourage the highly inefficient use of the linkage editor where the loader will do.
3. To add the standard IBM catalogued procedures (as documented in IBM publications) to the system library. It is felt that this would increase compatibility with other S/360 installations, but at the cost of some local confusion. (Note that using the IBM procedures does not mean that Job Control Language from another installation will run here; it merely reduces the necessary changes.

Comments (pro and con) should be directed to the consultants, Room 166, DCL.

ABEND

The following article appeared in the March, 1972 issue of the University of Waterloo newsletter, published by the Educational Services of the Computing Centre of the University of Waterloo, Waterloo, Ontario. This article was written by Carol Vogt of the University of Waterloo and appears in its entirety. Brackets [] indicate changes, insertions or deletions made to the article in order to adapt it to the University of Illinois' 360/75 system. Our appreciation and thanks are extended to Carol Vogt and the Computing Centre of the University of Waterloo.

ABENDicitis
by C. Vogt

Error Messages! ABENDS! Programme Interrupts!
If you use the computer and have not had to cope with

these facts of programming life, you are either the world's best programmer, extremely lucky, or someone else writes and runs your programmes for you. From time to time most programmers are forced to interpret some of these messages. To fully comprehend what you are being told when your programme receives a diagnostics message, it is necessary to understand how errors are detected by the computer.

Compile-time errors and JCL errors are perhaps the easiest to understand. These types of errors are detected by complex scanning routines. But what about execution time errors? A WATFIV programme has its errors diagnosed by the compiler itself. While the programme is running, the WATFIV compiler remains in core and monitors execution. Each time a variable is used, it is checked to ensure that it has previously been defined. WATFIV accomplishes this by initializing all variables in the programme to a special bit pattern; all variables used are compared to this bit pattern and an UNDEFINED VARIABLE error message is generated if a match occurs. The bit pattern used by WATFIV is a string of hexadecimal 80s. If your programme should be unlucky enough to generate this bit pattern, (a very remote possibility) you could be facing a very puzzling situation. Similarly, every time a subscripted variable is referenced, the subscript is checked to ensure that it is within the dimensioned size for the variable. If it is not, a diagnostic, SUBSCRIPT OUT OF RANGE, is generated.

This type of error checking is extremely beneficial when a programme is being debugged, but it does consume a significant amount of computer time. Programmes compiled under most processors, such as IBM's FORTRAN G and H compilers, do not perform this type of checking, but they can detect some error conditions. What diagnostic capabilities exist under these compilers?

Every programme compiled under IBM FORTRAN generates calls to error handling routines which are link-edited into the programme from the FORTRAN

library, SYS1.FORTLIB. The names of these routines can be found in the LINKAGE EDITOR map. They all begin with the letters IHC. These error-handling routines can detect such things as end-of-file conditions, illegal characters in input data, or an argument of the SORT function which is negative. All FORTRAN error messages are of the form IHCnnnI. However, no checking is done on undefined variables or subscripts that are out of range.

But, as every programmer knows, variables can be undefined, subscripts can be out of range, and many other unexpected conditions can arise, even in a supposedly bug-free programme. These conditions can occur because most programmes are data-dependent to some extent. An error beyond the scope of the error-handling routines of the programme must be diagnosed by the Operating System. The Operating System, however, has a very basic philosophy about errors: if you don't bother the Operating System, and don't disturb any other job executing simultaneously with yours, the Operating System doesn't care what your programme does to itself. Actually, it doesn't know. If your programme does something wrong that OS detects, it will issue a programming interrupt and terminate you with an [error message] of the form [UILRROCX]. For example, coding such as:

```
      REAL  X(10)
      I=11
      DO 16 J=1,I
16      X(J)=0.0
```

will quite likely not cause any diagnostic to be generated. However, consider the following.

```
      REAL  X(10)
      I=10000
      X(I)=0.0
```

There is a very good chance that the address generated for X (10000), and therefore the place that the computer will attempt to store a zero, might be in

some other JOB's area of core. Your programme would then terminate with a [UIERROC4] [deletion] PROTECTION exception. In other words, the system protected some other programme from your logic error. What about the following?

```
      REAL X(10)
      I=500
      DO 16 J=1,I
16     X(J)=0.0
```

It is possible that no address will be generated that is outside your region, but those invalid X(J)s will be stored somewhere. Where? Probably on top of your other arrays (causing some very strange results), or, in many cases, on top of your object coding (or machine language instructions). In this example, a floating point zero might be stored in the middle of some instructions, causing the system to attempt to execute an instruction that looked like:

00000000

The result would be an [UIERR]0C1 OPERATION [Exception] because the system didn't know how to execute an instruction like that.

Everyone has received ABENDS that are not of the form [UIERR]0Cx, and many programmers have felt that these were the result of some kind of random number generator. This is not true. Most ABENDS, [deletion], are caused by an error condition arising in a Supervisor Call or SVC.

But, you say, you have never used an SVC? Well, whether you are aware of it or not, every programme you run uses SVCs. SVCs can be thought of as subroutines called upon by the system to perform specific tasks like opening a dataset, obtaining core for buffers for a programme, or loading a programme that is going to be executing from disk to core. Some SVCs which are frequently used reside in the nucleus (that part of the Operating System that is always core-resident). Most

of these SVCs are re-entrant, which means that more than one programme can use them at the same time. Others reside on a peripheral device. Each SVC has a 2 digit hexadecimal number associated with it. For example, an OPEN SVC has the hexadecimal code 13. If anything is amiss during the SVC, an ABEND of the form nxx results, where n is a hexadecimal number from [0] to F, and xx is the hexadecimal code for the SVC.

Suppose an OPEN SVC were being executed, and the dataset that was to be opened could not be found; a 213 ABEND would result. If the OPEN were pointed at a tape file that did not exist (for example, the fifth file when there were only four files on the tape) a 613 ABEND would be issued. 813 would be the code for the ABEND if any incorrect dataset name were given for a tape file. Similarly all n37 ABENDs result from the SVC that obtains secondary extents for datasets on direct access devices (hexadecimal code - 37). A B37 can mean that all 16 extents have been exhausted, and a D37 means that no secondary quantity was specified when the dataset was created. A similar correspondence can be found for all ABENDs of the form n22, n0A, n06, etc.

There exists one major advantage in having your FORTRAN programme terminate with a FORTRAN execution-time error message rather than with an ABEND; the FORTRAN error handling routines remain in control, and can do some last minute tidying up, such as writing all partially-filled buffers, [closing files and printing a TRACEBACK,] before they terminate your programme. This does not happen if your programme ABENDs.

[paragraph deleted]

Core dumps are another interesting topic. A core dump is a complete listing of the contents of your area of core as it appeared when an ABEND occurred. For most programmes that have ABENDED, a core dump presents the major debugging tool.

It would be possible to present a more detailed discussion of core dumps at this time, but this article

is about to end with an [A22] ABEND because it has exceeded its page limit, and the CANCEL SVC (hex code 22) is being invoked to terminate it.

SUMMER VACATION!

Publication of ILLINET OUTPUT will be suspended for the months of July and August. Have an enjoyable summer.

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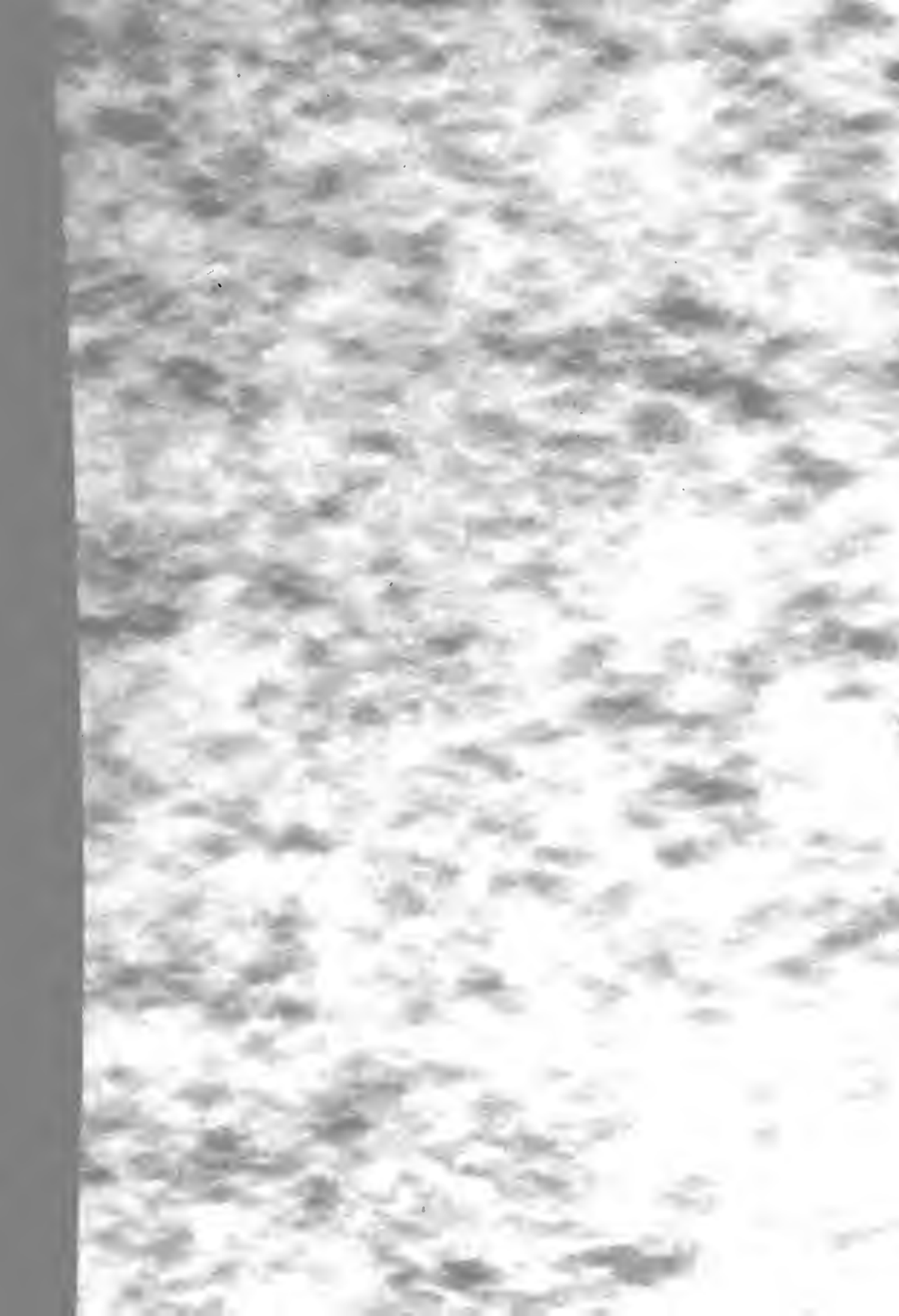


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